Hazard Mitigation Plan

City of Rye, New York

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I. INTRODUCTION

No community is spared from the emotional and fiscal impacts associated with natural and man-made disasters. The City of Rye is no exception. Rye has suffered losses associated with a variety of hazards occurring within and outside its boarders. There is a growing understanding that more should be done to take steps to mitigate (i.e. avoid or minimize) the impact of disasters *before* they occur, not just improve a community's response to and recovery from natural or man-made disasters. Mitigation is increasingly seen as a cost-effective approach to save a community from the loss of life and property associated with hazards.

This plan focuses on mitigation and seeks to identify action strategies that reduce the City's exposure and vulnerability to hazards. Unlike any other document prepared for the City to date, this plan is comprehensive in that it evaluates a broad range of natural and man-made hazards. The mitigation strategies are intended to be realistic in their implementation, recognizing the existing physical, cultural and financial limitations of the community. This plan, however, has a long-term outlook and anticipates that many of the most effective strategies may take years or even decades to implement.

This plan is also being prepared in response to the Disaster Mitigation Act of 2000, which requires that local governments have an approved Hazard Mitigation Plan to be eligible to receive Hazard Mitigation Grant Program (HMGP) funding. In addition, the development of this plan also fulfills other Federal Emergency Management Agency (FEMA) planning requirements including the Community Rating System (CRS) and the Flood Mitigation Act (FMA) that will assist the City in lowering flood insurance rates for its homeowners and making the City competitive for additional mitigation grants. In August 2002 the City of Rye received a Pre-Disaster Mitigation Planning Grant from the New York State Emergency Management Office (NYSEMO) to assist in the completion of this plan.

A cornerstone of the City's hazard mitigation plan is its emphasis on creating and enhancing partnerships. This plan was developed with the assistance and invaluable input of the Hazard Mitigation Committee, which consisted of City staff, emergency service providers and others representing a variety of interests in the community. The Committee met throughout the planning process creating this document and was instrumental in shaping the goals and objectives of the plan and identifying effective strategies. Section VI, *Plan Implementation and Monitoring*, provides a more complete discussion of the planning process.

To help facilitate the implementation of the mitigation strategies, the plan recommends establishing a new Hazard Mitigation Committee or, in the alternative designating the Rye City Planning Commission to serve in this capacity. The Committee will be responsible for promoting and monitoring the implementation of the plan and providing annual reports to the City Council on the progress of the recommended mitigation strategies.

II. PLANNING CONTEXT

Effective hazard mitigation planning must reflect the City's existing planning context. Regional location, land use patterns, topographic conditions and demographic characteristics present both opportunities and challenges in providing meaningful hazard mitigation strategies that best fit Rye' unique characteristics.

A. Regional Location

Rye is a City of approximately six square miles situated in the eastern part of central Westchester County, New York on Long Island Sound (see Figure 1). Rye is primarily a residential suburb of New York City, accessible to mid-town Manhattan via commuter express train service in 45 minutes. The Village of Port Chester is to the north of the City, the Village of Mamaroneck to the south and the Town/Village of Harrison to the west. Since Rye is a relatively small community much of the City's economic and environmental conditions are influenced by regional factors outside its boarders.

There are a number of significant transportation facilities within the City's boarders that serve not only the New York metropolitan area, but also the northeastern United States. The New England Thruway (I-95) cuts across the northwestern part of the City, and merges with the Cross Westchester Expressway (I-287) at the City's northern boundary. In addition, Metro North Commuter Railroad and Amtrak provide service on a railroad line that extends through Rye.

B. Land Use Pattern

First settled in 1660, Rye is an established community with a static development pattern. New development opportunities are limited though there continues to be redevelopment and expansion of existing structures. Hazard mitigation and land use policies must recognize and, where possible, preserve this existing character.

The City still maintains a development pattern influenced by the streetcar era of the late nineteenth/early twenty century. Within walking distance of the existing railroad station along Purchase Street is the City's Central Business District (CBD), which has approximately 400,000 square feet of floor area supporting largely local retail, personal service and professional office needs.

Most of the City consists of single-family residential neighborhoods, with densities ranging between less than one to six dwelling units to the acre. According to the 2000 Census approximately 68 percent of the dwelling units in the City were built before 1959. Several areas have historic houses and estates, particularly the southern Post Road area, Grace Church Street, Milton Road and Forest Avenue. Two and three family houses are found in the Maple-High Street neighborhood, the northern Purchase Street area and the Grapal Street-Cedar Place neighborhood. Apartments are for the most part located in the areas surrounding the Central Business District, although some newer multi-family developments are found on the waterfront. The surrounding areas

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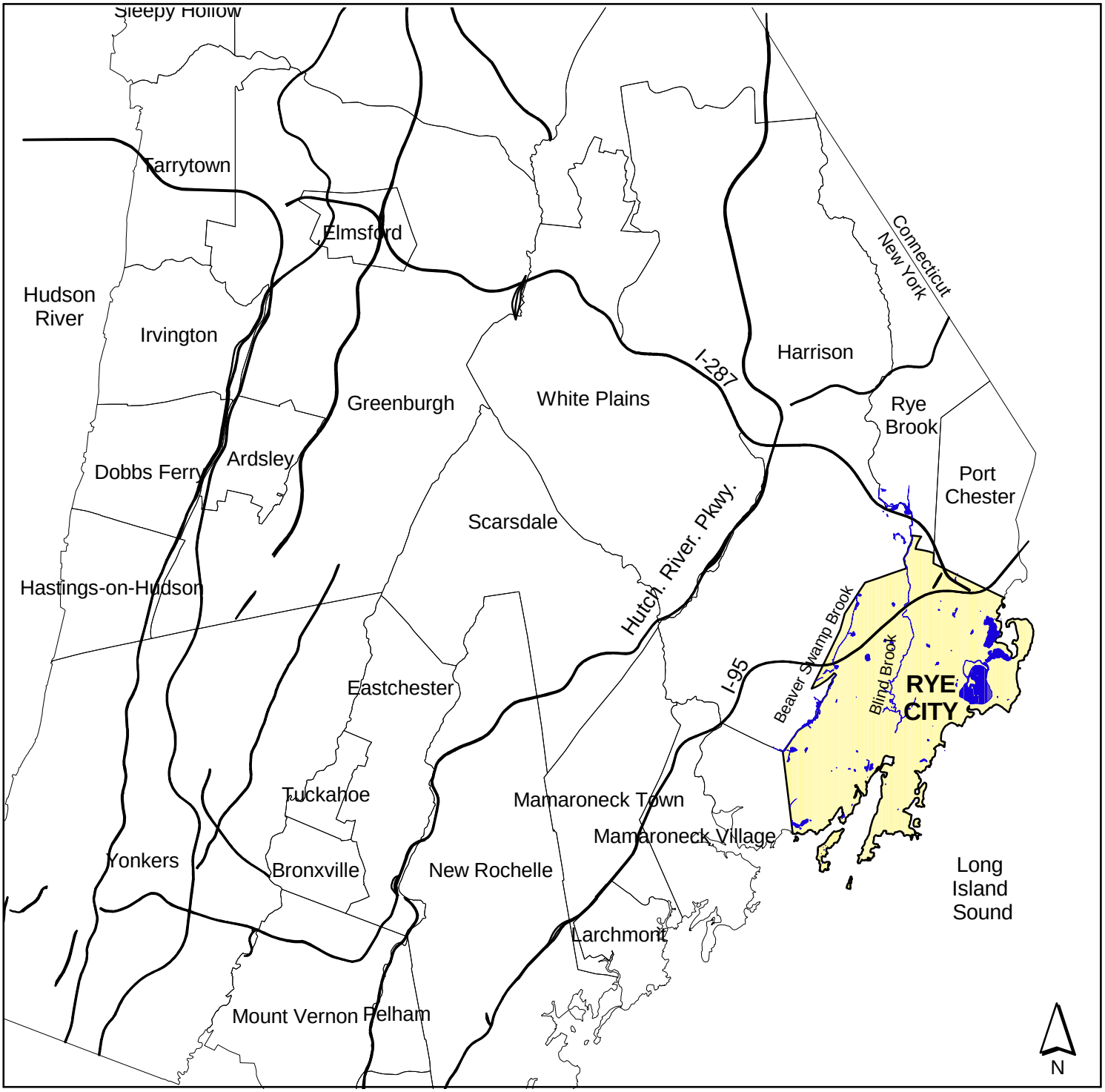

Figure 1:

Regional Location

GIS Rye, New York GEOGRAPHIC INFORMATION SYSTEM

40 0 40 80 120 160 Feet

Note: This map is intended for general planning purposes only.

Last Revised: 08/03

Purchase Street (north of I-95), Theodore Fremd, Locust Avenue and the Post Road include a mixture of garden apartments, one-two family houses and small offices.

Major office developments totaling approximately 550,000 square feet of floor area are located near the I-95 and I-287 interchange and south of the I-95 and Playland Parkway interchange along Theodore Fremd Avenue and Theall Road. The City has two small concentrations of light manufacturing activity, one located between the Thruway and Maple Avenue on Nursery Lane and the other on Cedar Place.

The City has a relatively large amount of open space and recreation land that is owned by either Rye City, Rye Town, Westchester County or private entities. These areas include the Marshlands Conservancy, Edith Read Sanctuary, Rye Golf Club, Rye Nature Center, the Apawamis Club, Playland Park, the Damiano Recreation Center and Recreation Park, Disbrow Park and Rye Town Park. There are also a number of private beach clubs on Long Island Sound at the end of Milton point and on Manursing Island.

C. Topographic Conditions

Water is the dominant topographic feature of the City. The western border of the City is or generally parallels Beaver Swamp Brook, while the eastern border is formed by Milton Harbor and the Sound. Blind Brook traverses the City, flowing from the northwest corner of Rye to the southern end of Milton Harbor. The majority of the City is located at the end of the Blind Brook watershed, which extends north from Milton Harbor to just beyond the northern tip of the adjacent Village of Rye Brook to the Westchester County Airport. A substantial tributary to the Blind Brook is located within the Town/Village of Harrison.

Rye contains a variety of environmentally significant areas. Numerous tidal and freshwater wetlands are found near the waterfront and brooks. The Milton Harbor area (including the Marshlands Conservancy and Rye Golf Club), Disbrow Park and the Manursing area contain the most extensive wetlands in the City. In addition, substantial areas near the Sound, Milton Harbor, Blind Brook and Beaver Swamp Brook are within the 100-year flood hazard area, and thus are subject to potential flooding. The City's highest elevation is located near Boston Post Road and Grandview Avenue on the Rye Country Day property, which serves as the City's emergency shelter.

The city of Rye is located in the Hudson Valley climate division of New York State. The seasonal temperatures are typical of the Northeast United States experiencing cold winters, mild springs, hot summers and mild falls. Average temperature in January is about 31 degrees F and 77 degrees F in July. Average rainfall in Westchester County is 45-50 inches per year. Average snowfall in Westchester County is 28-30 inches per year.

D. Demographic Characteristics

There are approximately 15,000 residents in the City according to the 2000 U.S. Census. Consistent with Rye's established land use pattern, this figure remained essentially unchanged from 1990. The oldest and youngest segments of the population are the fastest growing. The Rye City school system has experienced significant growth in the last few years and is undertaking expansions to its facilities. Rye is not a demographically diverse community with approximately 90 percent of the population classified as white and roughly 6.5 percent as Asian.

Rye is an affluent community; both property values and incomes are high. According to the 2000 Census the average household income exceeded $110,000 with 31 percent of the households earning more than $200,000 a year. Property values are also high. In 1991 the median sales price of a home in Rye was $392,000. Ten years later that figure has more than doubled to $790,000. In 2006 that figure has increased to $1.165 million. According to the 2000 Census roughly two-thirds of the City's 3,400 owner-occupied units exceed $500,000 in value.

The high value of property is a significant planning issue. Property acquisition as a strategy to advance hazard mitigation or other land use policies is expensive, especially for a community with a relatively modest annual budget of $28 million. In addition, aggressive land use regulation in this context can also be challenging and must be sensitive to the potential reduction in property values.

III. RISK ASSESSMENT

A major component of the hazard mitigation planning process is to assess Rye's vulnerability to a variety of natural and man-made hazards. This chapter provides a profile of potential hazards the City might reasonably anticipate and a description of how these hazards were prioritized. Also included is a discussion of the City's most critical facilities, the number of people at these facilities and their structural value. Finally, a discussion of the City's capability to respond to hazards events is provided.

A. Identifying and Prioritizing Hazards

The Hazard Mitigation Committee identified 23 potential hazards in the community. Many of these hazards were reaffirmed based on the Hazard Analysis Report (HAZNY) prepared by New York State Emergency Management Office (NYSEMO) for the City in 1998. This analysis also ranked the hazards as either "high", "moderately high" or "moderately low". Topping the list of hazards was flooding which was the only designated "high" hazard. The next four hazards identified as "moderately high" were (2) Hazardous Materials in Transit; (3) Nor'easters; (4) Oil Spills; and (5) Hurricanes. A complete listing of the hazards is included in Table 1. A complete copy of the HAZNY analysis and its rationale for prioritizing hazards is provided in Appendix A.

In identifying and prioritizing hazards a number of factors are considered including the scope or impact area, frequency of occurrence, advance warning of the hazard, the length of the event and the amount of time required to recover from an event.

1. Hazard Scope or Impact Area

Most hazard events cannot be anticipated to occur within a specific location in the City. Hazards such as explosions, fires, power failures, tornados, ice storms, etc. could occur in all or a portion of the City at any given time. Some events, however, can be geographically defined and are shown on Figure 2. For instance, most flood hazards can reasonably be anticipated to occur within the 100-year flood zone as defined by the FEMA Flood Insurance Rate Maps.

Spills associated with hazardous materials in transit have the greatest probably of occurring along the interstate transportation corridors in the city (e.g. I-95, I-287 and MTA railroad). Primary spill impact areas have been shown on Figure 2 and can range can range from 600 to 1800 feet depending on size and type of spill. These impact areas were based on "isolation areas" listed in the 1996 North American Emergency Response Guidebook.

Finally, there are hazard prone sites in the City that handle, use or store hazardous materials. These sites area shown on Figure 2 and include gas stations and properties that have submitted hazardous materials report forms to the New York State Department of State as required by law.

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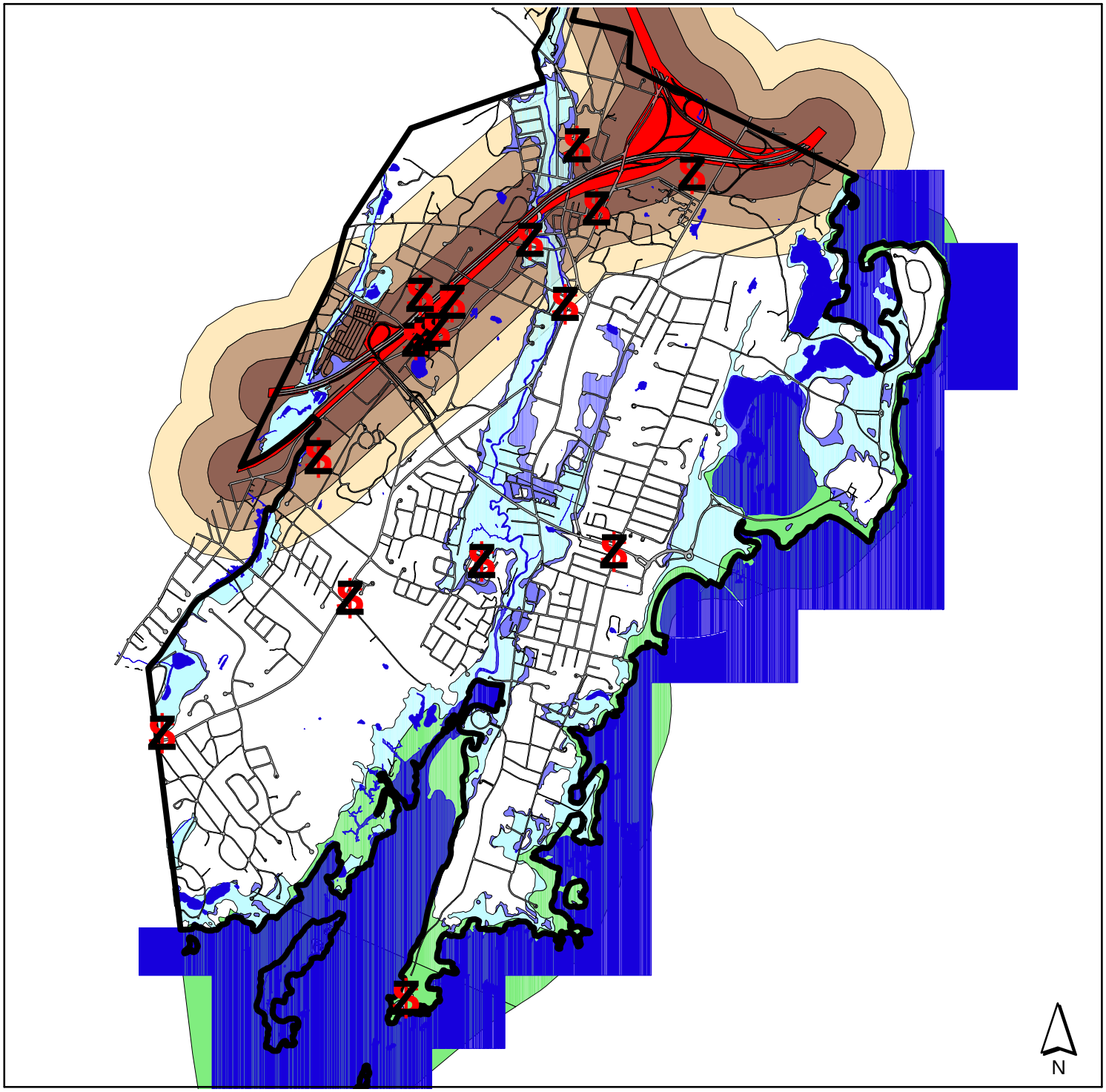

Figure 2:

Hazard Prone Areas

Hazardous Materials Site

Water

FEMA Flood Zones:

- 100-Year Flood Zone
- 100-Year Flood Zone (Wave Action)
- 500-Year Flood Zone
- I-95/I-287/MNRR Corridor

HAZ MAT Response Areas:

- 0 to 600 Feet
- 601 to 1,200 Feet
- 1,201 to 1,800

GIS Rye, New York GEOGRAPHIC INFORMATION SYSTEM

40 0 40 80 120 160 Feet

Note: This map is intended for general planning purposes only.

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2. Frequency of Occurrence

Each hazard is classified in terms of its frequency of occurrence. Information regarding frequency was based upon best available historical hazard event data. Gathering enough historical data with any predictive value was difficult to obtain, particularly where it is specific to a City that is only six square miles in area. Much of the data that is available is complied on a state- or county-wide basis. For the purposes of prioritizing hazards frequency was defined as follows:

Rare There is no historical knowledge that the hazard event has ever occurred within or near the City in the past and that such an event will likely occur every 25 to 50 years or more .

Infrequent There is some historical documentation that the hazard event may have occurred within or near the City in the past and that such an event may occur every 15 to 25 years.

Regular There is historical documentation that the hazard event has occurred many times within or near the City in the past and that such an event may occur every 5 to 15 years.

Frequent There is considerable historical documentation that the hazard event has occurred routinely within or near the City in the past and that such an event may occur every one to 5 year(s).

The prioritization tended to focus on the more severe hazard events that result in significant threats to life and property. Where possible smaller less severe events were also considered if they represented a meaningful threat to localized areas.

3. Warning

The amount of advance warning of a hazard event is also characterized for each hazard. The amount of warning was a factor in prioritizing hazards. In general most natural hazards have some advance warning of at least a day or so. Most man-made hazards tend to occur with little or no warning.

4. Length of Hazard Event and Recovery

Rating each hazard also depended on the length of the hazard event and the amount of time it took to recover from hazard events. As expected most hazard events have a relatively short duration, but full recovery back to pre-disaster conditions can take days or weeks.

B. Hazard Profile

The following provides a summary or profile of each of the hazards impacting the City. Possible similar hazards have been combined for the purposes of discussion.

1. Floods/Hurricanes/Nor'easters

The highest rated hazard in the City of Rye is flooding. This is a "frequent" event in the City of Rye. It is determined that a credible worst case flood event "would likely cause serious injury or death but not in large numbers" and that existing emergency services could handle the anticipated casualties. A significant flood event would likely cause both "severe" damage to both private and public property and the City's infrastructure. The coastal floodplain has significant residential and recreational development including Playland, Rye Town Park and private membership clubs. The non-tidal floodplains associated with Beaver Swamp and Blind Brooks have significant commercial, governmental, institutional and residential development located within flood prone areas.

Flooding occurs frequently. The City has been impacted by a number of significant flooding events including events in September of 1971, September of 1975, August of 1976, April of 1984 and December of 1992. Flooding impacts are generally limited to the FEMA100-year flood zone and other isolated areas not associated with water bodies. It is estimated that approximately 20% of the properties in the City are within a FEMA designated flood zone.

Impact areas can also vary based on tidal conditions. For instance, heavy rainfall combined with a high tide can produce significant flooding impacts on the City that only involve a relatively small event such as a 25-year storm. Areas in the City subject to routine flooding include the southern end of Milton Road, properties abutting Blind Brook (particularly the Indian Village section of Rye) and properties along Beaver Swamp Brook.

Nor'easters and hurricanes present hazards similar to flooding, but rated "moderately high" in Table 1. These types of storms occur frequently to regularly, but typically come with some warning of a few days or less. The duration of the event could last up to a few days. Recovery time from these events is expected to take days to weeks depending on the intensity of the storm.

Impact areas for nor'easters and hurricanes are similar to those for flooding events and generally apply to 100-year flood zones. Coastal areas, however, typically sustain greater damage due to the wave action, high winds and storm surges associated with these storm events. The City has approximately 14 miles of shoreline, a significant portion of that is designated within velocity zones on FEMA flood maps.

The City has been impacted by a number of hurricanes in its history. Hurricane Floyd in 1999 also caused significant damage to property in all areas of the City. Significant hurricane related weather events have occurred in 1938, 1944, 1985, 1972 and 1999. There have been only nine direct hurricane hits to New York State between 1900 and 1999. None of these events were categorized as level 3, 4 or 5. A 1992 Nor'easter combined with a high tide and resulted in one of Rye's most significant storm events in recent history.

2. Hazardous/Radiological Materials in transit

Hazardous materials in transit were considered a moderately high hazard. Smaller accidents and spills associated with these materials occurs frequently. More significant spills requiring evacuation of a portion of the City occur less frequently.

Three major transportation facilities travel through the City of Rye and surrounding communities including Interstate 95, Interstate 287 and Metro North Railroad. This transportation corridor bisects the northwestern portion of the City. All of these systems transport hazardous materials. A hazardous material spill on one of these routes would likely impact only a limited area. Primary impact area as listed in the 1996 North American Emergency Response Guidebook can range from 600 to 1800 feet depending on size and type of spill. The event would likely last less than a day and recovery time would only be a few days after the incident would have been brought under control. There would be no warning for such an event. According to 2001 New York State Department of Transportation data traffic volume on these interstates exceeds 95,000 vehicles per day.

Local roads can also be at risk from hazardous materials in transit, but traffic volume is generally limited to that serving local transportation needs. The City may also be impacted from hazardous materials in ships traveling in Long Island Sound. According to the City of Rye Fire Department there has been no major incident involving transportation facilities requiring mass evacuation of the City.

Radiological materials are also transported through the City. The frequency of this occurrence resulting in a hazard is believed to be infrequent. The scope of such an event would likely be limited and last less than one day. Recovery from such an incident could last days to weeks depending on severity. There have been no known incidents in recent memory involving radiological materials in transit. A likely source of such an occurrence would involve medical facilities in or around the City.

The City of Rye Fire Department would be the first responder to any hazardous material incident, including those involving radiological materials and oil/fuel

spills. The Westchester County Hazardous Materials Response Team is primarily responsible for isolation and clean up of the spill.

3. Fixed Site Hazardous Materials/Oil and Fuel Spills

Disasters associated with hazardous material incidents at fixed sites within or around the City were considered moderately high. The impact of such an event would likely be contained to the point of origin with possible additional contamination from hazardous materials being transported by water bodies and municipal infrastructure such as stormwater drains and sewer pipes. Significant spill events are infrequent and typically occur without warning. The length of such an event and its recovery time are comparable to those of hazardous materials in transit. Approximately forty sites in the City are known to have hazardous materials based on available records (See Appendix B). Radiological materials would most likely be identified in medical and dental facilities and would be present in small quantities. As shown in Figure 2 many of the haz mat sites are located in the northern half of the City straggling the I-95 corridor.

Oil/fuel spills were rated as having a moderately high risk. The impact area of such an event would likely be limited. Smaller spill events are frequent within the City, which typically occurs without warning. According to NYS Department of Environmental Conservation there have been 186 reported oil/fuel spill incidents in the City of Rye since 1997. The length of the event would likely be less than one day with a recovery time of a few days or less. The City has nine gas stations and other automobile service related facilities that are prone to periodic spills from tanker trucks. Spills have also been known to occur in residential and commercial structures within the City associated with fuel tanks.

4. Structural Fires/Wildfires/Explosions/Aircraft Crashes:

Fires are a common occurrence in any City and Rye is no exception. There is no warning in the cases of either structural fires or wildfires. Wildfires have not occurred, but could at some of the City's largest open spaces owned by Westchester County such as Edith Read Sanctuary and Marshlands Conservancy. Structural fires usually affect a single location depending on intensity. They last less than one day and recovery time is days to weeks following the event.

Most fires are associated with single-family homes, which is the predominate land use in the City. Figure 3 identifies census tracts where the median age of housing exceeds 60 years according to the 2000 Census. These areas have a greater fire threat because older housing tends to lack the fire prevention measures of newer homes. The City also significant fire potential from

commercial properties along Purchase Street and the office buildings along Theall Road.

The City of Rye Fire Department is a combination paid/volunteer organization with 10 cars and apparatus operating out of two fire stations. They protect an area of around six square miles. Mutual aid responses from surrounding communities are coordinated through the Westchester County Mutual Aid System. Total calls for service in 2002 were 814 averaging out to over 2,600 man-hours. There are a total of 3 to 5 working fires annually.

Explosions of any kind are an infrequent event in the City. There would likely be no warning for such an event. Once the explosion occurred it would last less than one day and recovery time would be days to weeks depending on severity. There have been no significant or major explosions within the City in recent memory.

Aircraft crashes could occur in the City since it is near or within the flight path of two major airports, but such events have been determined to be a moderately low hazard. The impact area would likely be limited to the crash site and there is little or no warning to such an event. The event would last less than one day and recovery time is estimated at a few days to a week.

The City of Rye is located within or near the flight path of LaGuardia Airport in New York City and the Westchester County Airport located in nearby White Plains, New York. Over 400 aircraft, including helicopters, are operated out of Westchester County Airport.

5. Dam Failure:

The City of Rye maintains an existing dam located on Blind Brook south of Bowman Avenue in the adjacent Village of Rye Brook. A dam failure in the City of Rye would be limited to properties along Blind Brook, particularly its northern reaches. Such an occurrence is considered rare, however a failure occurred in the 1940's requiring the dam to be reconstructed. There would be little or no warning. The event would likely last less than one day. Recovery time would likely be significant requiring days to months.

TABLE 1
Hazard Profile and Analysis

HAZARD OR EVENT	SCOPE OR IMPACT AREA[1]	FREQUENCY[2]	WARNING	DURATION		COMMENTS
				Length of Event	Recovery Time	
High Hazard[3]						
Flood	Limited Areas	Frequent for smaller storm events. Regular for more significant events	Day(s)	Day(s)	Day(s) or Week(s)	Flooding impacts are generally limited to FEMA flood zone areas, though isolated areas not associated with water bodies can also be impacted. Impact areas can also vary based on tidal conditions. Major flooding events occurred in Sept. '71, Sept. '75, Aug. '76, April '84 and Dec. '92.
Moderately High Hazard						
Hazardous Materials in Transit	Limited Areas	Frequent for smaller spill events. Infrequent for more significant events requiring mass evacuations	None	Less than one day	Day(s)	Interstate I-95 and I-287 and Metro-North Railroad are major regional transportation systems that carry hazardous materials. Traffic volume on the interstates average over 95,000 vehicles per day[4]. Primary impact area for spill events can range from 600 to 1800 feet depending on size and type of spill[5]. According to the City Fire Department, there has been no major spill within this corridor requiring evacuation of any part of the City. Long Island Sound is also a transportation corridor. From 1997 - 2002 Rye Fire

[1] Scope of impact is classified as City-wide, Limited Areas or Single Location.
[2] Hazard frequency is classified as an event that is either Rare, Infrequent, Regular or Frequent.
[3] List of Hazards and their classification is based on the 1998 Hazard Analysis Report prepared by New York State Emergency Management Office with City of Rye representatives and the input of the Hazard Mitigation Planning Committee in November 2002.
[4] Based on 2001 New York State Department of Transportation Annual Average of Daily Traffic Data.
[5] Impact area is derived from "isolation areas" listed in the 1996 North American Emergency Response Guidebook.

HAZARD OR EVENT	SCOPE OR IMPACT AREA[1]	FREQUENCY[2]	WARNING	DURATION		COMMENTS
				Length of Event	Recovery Time	
						Department responded to 559 hazardous situation calls.
Nor'easter	Limited Areas	Regular	Day(s)	Day(s)	Day(s) or Week(s)	Impact areas are similar to those for flooding events, however coastal areas generally sustain greater damage. A 1992 Nor'easter combined with a high tide to result in one or Rye's most significant storm events in recent memory.
Oil Spill	Limited Areas	Frequent for smaller spills events. Regular for more significant events	None	Less than one day	Day(s)	City has 9 gas stations and other auto-related uses that are prone to oil spills. Spills also occur on local roadways from vehicles in transit and leaking tanks in both commercial and residential structures. According to NYS DEC statistics, there have been 186 reports of oil spill incidences in Rye.
Hurricane	Limited Areas	Regular	Day(s)	Less than one day	Day(s) or Week(s)	The City has been impacted by a number of hurricanes in its history including events in 1938, 1944, 1972, 1985 and 1999. There have been only nine direct hurricane hits to New York State between 1900 and 1996, none of which have been major (i.e. Category 3, 4 or 5)[6]
Fire	Single Location	Frequent for smaller fires events. Regular for more significant events	None	Less than one day	Day(s) or week(s)	Fires to structures in the City are common. Major fires involving large areas are not common. From 1999 - 2002 there have been 153 structural fires in the City of Rye. Only two fire related fatalities in last 30 years.
Explosion	Single Location	Regular for smaller events	None	Less than one day	Day(s) or week(s)	There have been no significant or major explosions in the City in recent memory.
Power Failure	Limited Areas	Frequent for smaller events.	Day(s)	Less than one day	Day(s)	Power failures are typically associated with major storm

[6] National Hurricane Center Data (see: http://www.nhc.noaa.gov/paststate. Html)

HAZARD OR EVENT	SCOPE OR IMPACT AREA[1]	FREQUENCY[2]	WARNING	DURATION		COMMENTS
				Length of Event	Recovery Time	
		Regular for more significant events				events and are common. August 2003 black resulted in significant disruption to region. The Con Edison facility in Rye is a major power control center for much of southern Westchester County.
Transportation Accident	Limited Areas	Regular	None	Less than one day	Less than one day	
Hazardous Materials at Fixed Sites	Single Location	Frequent for smaller events.	None	Less than one day	Day(s)	Roughly 40 hazardous material facilities have been identified in the City (see Appendix B).
Tornado	Limited Areas	Infrequent	None	Less than one day	Day(s) or week(s)	There are no known reports of tornados in Rye. According to best available data from NCDA, there have been only nine report tornado events in Westchester County since 1971.[7]
Ice and Winter Storm	City-wide	Frequent	Day(s)	Less than one day	Day(s) or week(s)	
Moderately Low Hazard						
Structural Collapse	Single Location	Rare	None	Less than one day	Day(s) to Month (s)	There are no known reports.
Terrorism	Limited Area	Rare	None	Less than one day	Day(s) to Month (s)	
Dam Failure	Limited Area	Rare	None	Less than one day	Day(s) to Month(s)	There is an existing dam on Blind Brook located south of Bowman Avenue in the Village of Rye Brook. A dam failure occurred in the 1940's requiring the dam's reconstruction.
Drought	City-wide	Regular	Day(s)	Month(s)	Week (s)	
Water Supply Failure	City-wide	Infrequent	Non	Less than one day	Day(s)	With the exception of North Kirby Lane and a handful of other properties in the City, the City is served by public water supply systems. Aquarion is the primary

[7] National Climate Data Center Data (see: http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms)

HAZARD OR EVENT	SCOPE OR IMPACT AREA[1]	FREQUENCY[2]	WARNING	DURATION		COMMENTS
				Length of Event	Recovery Time	
						service provider, with Westchester Joint Waterworks serving the Greenhaven section of Rye.
Earthquake	City-wide	Rare	None	Less than one day	Day(s) to Week(s)	Westchester County is not prone to earthquake events, though minor events have occurred in White Plains and Dobbs Ferry. According to New York State Geological Survey, there have been 17 "significant" earthquakes in New York since 1737, five of which exceeded magnitude 5.[8]
Radiological Materials in Transit	Limited Area	Rare	None	Less than one day	Day(s) to Week(s)	There are no known incidents of radiological hazards in transit. A likely source of such material would be medical facilities in and near the City.
Wildfire	Limited Area	Rare	None	Less than one day	Day(s) to Week(s)	
Heat Wave	City Wide	Frequent	None	Day(s) to Week(s)	Day(s) to Week(s)	
Thunder-storms/High Wind	Limited Areas	Frequent	Day(s)	Less than one day	Day(s) to Week(s)	There have been 119 reported thunderstorm/high wind events in Westchester County since 1959.[9]
Airplane Crash	Limited Areas	Rare	None	Less than one day	Day(s) to Week(s)	Rye is located within or near the flight paths of LaGuardia and Westchester County Airports.

[8] See http://www.nysm.nysed.gov/geosige.html
[9] National Climate Data Center Data (see: http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms).

6. Power Failure/Water Supply Failure:

A power failure within the City would most likely impact only a section of the City, though significant events could impact the entire City. They occur frequently and have potential for prior warning if associated with storm events. The incident usually will last less than a day and take a few days or less to recover from. Power failures are typically associated with major storms or high energy demand days in the summer months. The Consolidated Edison, or Con-Ed, facility in Rye is a major power control center for much of Southern Westchester County, New York. This is a critical facility for distributing power to Rye and abutting communities.

In August 2003 there was a massive power failure that impacted the entire northeastern United States. That event highlighted the condition of the power grid, the growing demand for electricity and the region's susceptibility to a major power failure. In light of that event there is increasing attention to the City's vulnerability to a major black out, which may occur on a more frequent basis than previously recognized. As a result, there has been increasing attention and efforts by individual property owners to provide back-up power generation to meet their electrical needs during power outages.

A water supply failure would typically be an isolated incident, but could be a citywide. Such an incident would rarely occur within the City and would most likely last a day or less. Recovery time is estimated to be one day. With the exception of North Kirby Lane in the City of Rye, and a handful of other properties, the City is served by a public water supply system. Aquarion is the primary service provider for the City and Westchester Joint Water Works serves as primary provider for the Greenhaven section of the City.

7. Thunderstorms/High winds/Winter and Ice Storms

Thunderstorms and high winds are rated as a moderately low hazard. They occur frequently within the City and usually last for a day or less. Recovery time is a few days to a week. The impact area is limited, but would likely have a greater impact to older homes (i.e. pre-1940) such as those located in areas identified in Figure 3.. According to the National Climate Data Center there have been 119 reported major thunderstorm and high wind events in Westchester County, New York since 1959.

Winter and ice storms are a frequent event affecting the entire City. Older buildings with flat roofs such as those located in the City's Central Business District are potentially vulnerable to a structural collapse associated with the weight of snow and ice from major storm events. Pre-1940 housing and older buildings would also be more vulnerable to freezing pipes and other impacts associated with extremely low temperatures. There is usually at least one day of

warning prior to such events and they usually last a day to a few days. Recovery from winter related storms could take days to weeks.

8. Earthquake/Tornado/Structural Collapse:

Earthquakes are determined to be a moderately low hazard. The impact of such an event would likely be citywide but are considered rare. There would be no warning, last less than one day and would take an estimated few days to weeks to recover from. Westchester County, New York is not prone to significant seismic events, however minor earthquakes have occurred in White Plains and Dobbs Ferry, NY. According to the NYS Geological Survey there have been only 17 "significant" earthquakes recorded in New York State since 1737. Only five of those 17 exceeded an earthquake magnitude of 5.

Tornadoes are considered a moderately high hazard. Such an event would most likely have an impact on a limited area of the City. There is little or no warning, but such events are rare. The event would last less than one day and require an estimated days to weeks to recover. There are no known reports of a tornado ever touching down in the City of Rye. According to the best available data from the National Climate Data Center there have only been nine reported tornado events in Westchester County since 1971.

Structural collapses would most often be closely related to events such as earthquakes, tornadoes, explosions, extremely heavy snowfall and terrorism. A structural collapse would only impact a single location within the City. They are rare and there are no known reports of any significant collapses. There is usually very little warning prior to a collapse and the event itself would last less than one day. It would require an estimated recovery time of days to months.

9. Drought/Heat Wave:

A drought is a citywide occurrence that also affects the entire County. Droughts occur regularly in Westchester and their greatest period of impact is during the hot and dry summer months. The city would have as much as a days warning prior to such an event. They can last up to months at a time and require weeks of steady rainfall to recover.

Closely related to droughts are heat waves. Like a drought a heat wave is a citywide occurrence often affecting the entire County. They occur frequently in the summer months with little or no warning. Heat waves can last from days to weeks before returning to normal seasonal temperatures.

10. Terrorism:

Terrorism is considered a moderately low hazard. The events of September 11th 2001, however, have forced communities to discuss terrorism as a more serious possible hazard. The City of Rye enhanced its training, education, and equipment to local emergency services, law enforcement, and government personnel. The City is not considered to have any significant targets of opportunity. An act of terrorism within the City, or from surrounding communities and/or New York City, would likely impact only a limited area. The events themselves will last less than one day but could take days to months for recovery. Terrorism comes in many forms including explosive detonation, chemical, biological or radiological release, nuclear detonation, hijackings/kidnappings, arson fires, shootings and cyber/computer attacks. Recently there have been concerns regarding a potential terrorist attack at Indian Point Nuclear Power Plant and the appropriateness of the proposed evacuation measures. Though Rye is outside the 10-mile zone response zone, an event of this magnitude would have considerable impact on regional transportation systems and the City's emergency service responders.

C. At-Risk Facilities and Areas

There are a number of facilities and areas in the City that are considered sensitive sites or facilities that require protection from hazards. Sensitive or vulnerable facilities are those considered essential for providing emergency response to a hazard event. Sites that may have large concentrations of people or at-risk populations such as children or the elderly were also considered sensitive and vulnerable to a hazard event. Other sensitive facilities that may be vulnerable to a hazard event include hazardous materials facilities and areas with older construction. Table 2 provides a list of these facilities, the estimated number of people and their value. The following provides a summary of these facilities and the potential vulnerability to each hazard event.

1. Emergency Response Facilities

Facilities (shown as red squares in Figure 3) involved with emergency response to a hazard event were deemed critical. Each of the City's two fire stations and its police station were included. Other critical City facilities include City Hall and the Department of Public Works Building, both of which are involved in emergency response to significant hazard events. Rye Country Day School was deemed a critical facility since it serves as the City's shelter. United Hospital has closed. Hospitals in Greenwich, Connecticut, White Plains and New Rochelle are The closest major hospitals that would serve the medical needs of many Rye residents in the event of a hazard. The Con Edison facility in Rye was also deemed critical since it controls and manages power for a significant portion of

Hazard Mitigation Plan

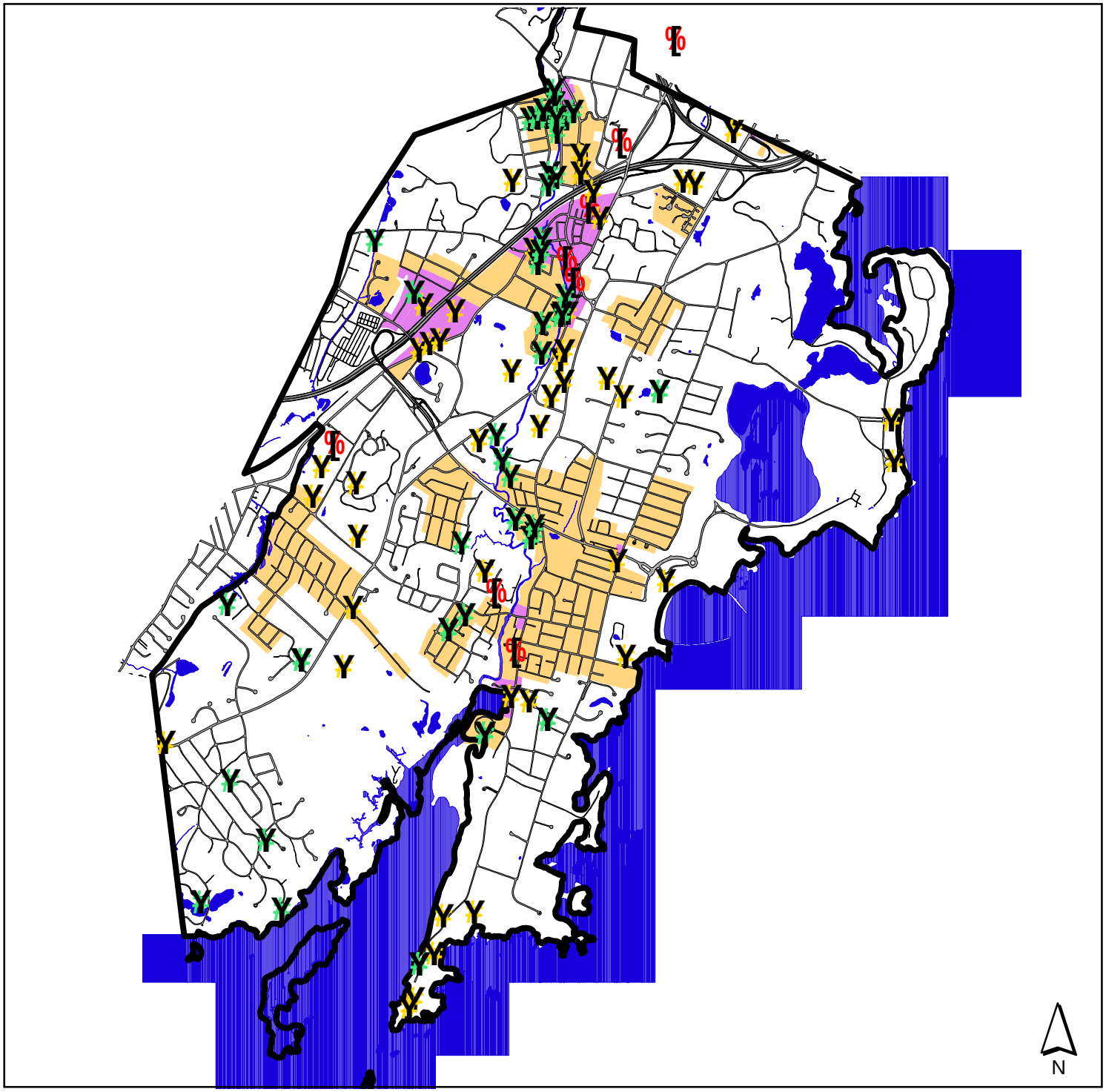

Figure 3:

At-Risk and Significant Facilities

- FEMA Repetative Loss Properties

Critical Facilities:

- Emergency Response Facilities
- Other Facilities
- Water
- High Density Commercial Areas
- High Density Residential Areas

GIS
Rye, New York
GEOGRAPHIC INFORMATION SYSTEM

40 0 40 80 120 160 Feet

Note: This map is intended for general planning purposes only.

Last Revised: 08/03

Westchester County. Keeping these facilities operational during hazard events is essential to providing adequate emergency response.

Many of these facilities are located within hazard prone areas making it especially important to implement measures to ensure that these facilities can withstand the impact of a hazard event. Both of the City's fire stations and City Hall are located within designated 100-year flood zones and would likely be impacted by most major flooding events. Access to the DPW facility could be impacted for only the largest events such as a 100-year storm. Hurricanes and nor'easters tend to have a greater impact on tidal areas, which would impact the City's Milton Avenue Firehouse to a greater extent.

The Rye City Police Station, Rye Country Day School and the ConEd facility are located outside flood-prone zones but located close to a designated hazardous materials corridor. In the event of a major spill these facilities may require evacuation comprising emergency response.

The police station because of its age, condition and roof pitch may be marginally vulnerable to structural collapse or winter storm events with heavy snows. Rye Country Day School has undergone a recent renovation, however, its flat roof may make it vulnerable to this hazard event. There may be similar concerns with snow loads on the ConEd facility.

Power failure (including those associated with thunderstorm events) would impact all emergency service facilities that do not have emergency back-up power. Where such back-up is not available it should be provided.

With the exception of the above emergency facilities were not deemed particularly vulnerable to other hazards listed in Table 1.

2. Recreational Uses

Many of the recreational uses in the City are located within flood prone areas along the coast. The combined population of these facilities can exceed 9,000 people during summer months representing a significant hazard vulnerability. These facilities include public uses such as Westchester County Playland and Rye Town Park, as well as private beach clubs on Manursing Island and at the end of Milton Point. Fortunately, these facilities are most susceptible to coastal flooding events (such as nor'easters and hurricanes), which typically occur with some warning thereby minimizing potential loss of life. The more significant impact is economic. These clubs (excluding Playland) have an estimated structural value of approximately $20 million and have been impacted by prior storm events. In 1992 many of these recreational uses incurred significant property damage from a nor'easter. Many of these facilities were rebuilt.

Most of the City's private clubs are old lacking modern fire prevention and building construction features making them potentially vulnerable to increased structural fire risk. Manursing Island, Westchester Country Club and Playland would be at greatest risk to a wildfire in the event one was to occur at Edith Read Sanctuary.

With the exception of the Apawamis Club most recreational uses are located outside a designated hazardous materials corridor. Many of these uses are located along Long Island Sound and would be vulnerable to spills from shipping vessels. Since these uses are not located near commercial areas they are not within close proximity to haz mat sites and generally not vulnerable to oil spills along major roadways. According to the U.S. EPA American Yacht Club and Playland do have hazardous materials.

With the exception of the above recreational uses are not considered particularly vulnerable to other types of hazards listed in Table 1.

TABLE 2
At-Risk or Sensitive Facilities

Facility Name	Facility Type	Approx. Number of People*	Estimated Structure Value	Hazard Prone Area	
				100-Year Flood Zone**	Haz Mat Corridor
American Yacht Club	Club	800	$5,106,860	X	
Shenorock Shore Club	Club	800	$4,544,855	X	
Durland Scout Center	Club	100	$3,500,000	X	
Coveleigh Club	Club	800	$1,013,193	X	
Westchester Beach Club	Club	800	$3,500,000	X	
Manursing Island Club	Club	800	$2,393,799	X	
Rye Golf Club	Club	500	$4,292,876	X	
Apawamis Club	Club	800	$3,400,000		X
Bowman Avenue Dam	Dam	0	N/A	X	
Avon Day Care	Day Care	54-100	$9,500,000		X
Resurrection School	Day Care	54	$6,900,000		
Presbyterian School	Day Care	54	$10,526,385		
Milton Fire House	Emergency Response	15	$4,500,000	X	
Locust Fire House	Emergency Response	20	$4,500,000	X	X
Police Station	Emergency Response	50	$1,200,000		X
Rye Country Day School (Shelter)	Emergency Response	790	$23,568,602		X
DPW Garage	Emergency Response	70	$2,800,000		
City Hall	Emergency Response	50	$4,597,625	X	X
Con. Edison	Emergency Response	150+	$4,100,000		X
Shell Gas Station	Gas Station	10	$290,000		X
Mobil Gas Station	Gas Station	10	$168,865	X	
Rye Brook Service Station	Gas Station	10	$880,000	X	
Rye Gulf Station	Gas Station	10	$370,000		
Texaco Gas Station	Gas Station	10	$230,000		X
Gulf Station	Gas Station	10	$135,000		X
Citgo Service Station	Gas Station	10	$100,000		X
PJ's Service Station	Gas Station	10	$380,000		
Rye Neck Getty	Gas Station	10	$180,000	X	
Con. Edison	Haz Mat	N/A	4,072,559		X
Avon	Haz Mat	N/A	$9,500,000		X
Mitsubishi Imaging	Haz Mat	N/A	$16,000,000		X
Verizon	Haz Mat	N/A	$680,739		X
Rye Printing	Haz Mat	20	$250,000		X
County Sewage Treatment	Haz Mat	N/A	$7,500,000	X	

Facility Name	Facility Type	Approx. Number of People*	Estimated Structure Value	Hazard Prone Area	
				100-Year Flood Zone**	Haz Mat Corridor
Plant					
American Yacht Club	Haz Mat	800	$5,106,860	X	
Marriott Hotel	Hotel	75-145	$13,000,000		X
Rye Medical	Medical	23	N/A		X
Rye Hospital Center	Medical	34	N/A		
Rye Marina	Park	250+	$900,000	X	
Playland	Park	5,000	$31,010,554	X	
Rye Town Park	Park	500	$1,030,343	X	
Rye Nature Center	Park	20	$683,377		X
Rye Recreation	Park	N/A	$2,800,000		
Metro North Railroad Station	Railroad Station	2500	$14,300,000		X
Osborn School	School	530	$8,500,000		
Milton School	School	350	$6,490,765		
Rye Middle/High School	School	1250	$46,976,253	X	
Midland School	School	600	$12,500,000		
Resurrection School	School	260	$6,900,000		
United Methodist School	School	32-75	$1,908,971		
Rye YMCA	Community Center	60+	$8,800,000	X	X
Rye Free Reading Room	Public Library	5+	$3,000,000	X	X
Osborn Home	Senior	720	$59,498,681		X
Rye Manor	Senior	N/A	$6,300,000		X

** Occupancy can vary depending on season*

*** Facilities within a designated flood zone are generally considered vulnerable to most flooding events including flash floods, nor'easters and hurricanes.*

3. High-Density Commercial and Residential Areas

Figure 3 shows areas of high-density commercial and residential areas. These areas are at-risk to hazards because they have significant concentrations of population. Commercial areas include the business districts along Purchase Street and office buildings along Theodore Fremd Avenue and Midland Road, which combined have over one million square feet of floor area. Residential areas include the City's smaller-lot single-family residential neighborhoods and multi-family dwellings. These areas have a density that ranges between 4 and 17 dwelling units to the acre.

High density areas are mostly located in the central portion of the City and would be less vulnerable to tidal or coastal flooding events such as hurricanes and nor'easters. Non-tidal storm events along Blind Brook such as a dam failure, heavy rains associated with thunderstorms or other heavy rainfall events would impact many of the City's high density commercial and residential areas. These areas include properties in Indian Village, the northern section of Purchase

Street, the City's Central Business District and the residential neighborhoods north of Playland Parkway. It is this concentration of development around flood prone areas along Blind Brook that makes flooding the City's highest hazard priority. It is a frequent event that impacts a large number of people and properties.

Nearly all of the City's commercial properties are located within the hazardous materials corridor of I-95, I-287 and Metro-North Railroad. Some of the highest concentrations of population would be impacted by a major spill event. In addition, most of the City's hazardous material sites are located within this corridor further increasing risk vulnerability.

The City's high density residential areas are also some of the City's oldest neighborhoods (see Figure 3, areas where the median year built is greater than 1940). As a result these areas are potentially more vulnerable to structural fires, structural collapse and other hazards where the age of housing increases risk. The City's high density commercial areas face similar risks, however, many of the areas are along Purchase Street are within designated fire limits, which requires more stringent building code and fire safety requirements. The concentration of development in high density areas contributes to the potential spreading of fire creating a more significant event.

Commercial areas with older, more rigid construction (such as the City's Central Business District) would be potentially more vulnerable to earthquakes. Single-family housing, which compromises more than 75% of the properties in the City would be less vulnerable to earthquakes. These structures typically consist of more flexible wood frame construction that can better withstand earthquake events.

High density commercial areas tend to have flat roofs making them potentially more vulnerable to collapse associated with heavy snow and ice loads from winter storms. Pitched roofs, which is common for residential structures, do have this risk, but would be more vulnerable to freezing pipes and other impacts associated with extremely low temperatures.

Thunderstorms and high winds would pose the greatest risk to the City's oldest residential neighborhoods that have large mature trees. This threat is not as great a concern in the City's commercial areas since they generally lack large trees. Falling trees and branches is a frequent event in Rye associate with storm events and has damaged property and triggered electrical fires.

High density areas have high concentrations of people and structural value and would therefore be more vulnerable to hazards that have a limited impact area such as explosions, tornados or airplane crashes.

4. NFIP Repetitive Loss Structures

There are a number of repetitive loss structures in the City that are at-risk to flooding events. These include properties that have filed more than one claim exceeding $1,000 from the National Flood Insurance Program (NFIP). A majority of these properties are located along Blind Brook, though there are some repetitive loss properties that are located outside designated flood zones within the Greenhaven section of Rye. There is a particular concentration of repetitive loss properties located north of I-95 in the Indian Village section of Rye. According to NFIP data there have been 273 repetitive loss claims in the City since 1978. The total value of these claims exceeds $4.5 million with an average claim exceeding $16,000. The value of these claims have not been adjusted for inflation and would be significantly higher if expressed in current dollars.

5. Child and Senior Uses

Day care, schools and facilities for seniors within the City are vulnerable to hazards. These uses also require special attention for almost every hazard event. The City has three day care facilities, four public and three private schools with a combined population exceeding 4,000 children.

There are two senior facilities including the Osborn Home residential care facility and the 100-unit Rye Manor housing development. Both of these uses are located on Theall Road and have an estimated combined population of over 800 residents. Both of these facilities are located on the City's highest elevations and are not vulnerable to flooding events. These facilities are within 600 to 1,200 feet of the hazardous materials corridor and would likely require evacuation in a spill event since they have at-risk populations.

Heat waves, water supply failures and winter storms have a greater life-threatening impact to young children and seniors than the general population. Senior facilities, day care centers and schools require particular attention during these events.

Terrorism is considered a low hazard for Rye, however schools and child care facilities, particularly those associated with religious institutions, may be at greater risk.

6. Sewage Treatment Plant

Westchester County maintains the Blind Brook Sewage Treatment Plant at the City's Disbrow Park. This facility provides sewage treatment for a significant portion of Rye and its neighboring municipalities. This facility is located within a designated flood zone and could be potentially overcome with flood waters in a

100-year storm event. Its operational capability during a major flooding event is not known.

7. Hazardous Materials Sites

Hazardous material sites in the City have already been discussed as hazards, but they also represent at-risk facilities that require protection during hazard events. Many of the City's haz mat sites and gas stations are within flood prone areas and the hazardous materials corridor. A complete list of these sites as complied by the U.S. EPA is included in Appendix B.

D. Asset Inventory

There are over 4,800 properties in the City of Rye with an estimated full market value of $6.25 billion and approximately $2.73 billion in structural value (see Table 3)[10]. Approximately 18% of these properties are within the 100-year flood zone and approximately 29% are located within the hazardous materials corridor.

Rye is predominately a residential community so it's not surprising that 75% of the 4,800 parcels in the City are associated with single-family dwellings. Non-single-family properties are only 25% of the parcels, however they represent nearly 55% of the estimated market value and 27% of the structural value in the City. In addition, a greater proportion of non-single-family properties are located within hazard prone areas such as the 100-year flood zone.

Approximately 18% of the 7,070 buildings in the City are located within 100-year flood zones. This represents approximately 28% of the City's total structural value. Since Rye is substantially developed and improved the full market value of property is high at over $2.2 billion. This represents an average value of approximately $2.1 million for each of the 1,005 properties located in the 100-year flood zone.
Estimating the impact of a hazard can very greatly depending on the type and magnitude of the event. It is clear, however, that the market value of structures is high and that the cost of mitigating the impact of hazards would likely have a substantial fiscal benefit. For instance, if only five percent of the structures within the 100-year flood zone were protected from flooding impacts that would save close to $38 million in structural value.

[10] The Rye City Tax Assessor provided all value data. Full market value includes the Assessor's appraisal of the combined value of the land and all improvements. Structural value is the Assessor's appraisal of the value of the improvements only.

TABLE 3
Inventory of Property and Structural Assets

	Number of Buildings		Number of Properties		Estimated Full Market Value	Estimated Structural Value
	#	%	#	%		
City Wide	7,070	100%	4,830	100%	$6.25 Billion	$2.73 Billion
Single-Family Properties	4,433	63%	3,646	75%	$2.84 Billion	$2.0 Billion
All other Properties	2,637	37%	1,184	25%	$3.41 Billion	$730 Million
100-Year Flood Zone	1,259	18%	1,005	21%	$2.2 Billion	$756 Million
Single-Family Properties	517	7%	682	14%	$694 Million	$453 Million
All other Properties	742	11%	323	7%	$1.52 Billion	$303 Million
Hazardous Materials Corridor	2,084	29%	1,335	28%	$2.04 Billion	$803 Million
0-600 Ft.	675	9%	497	11%	$1.05 Billion	$287 Million
6001-1,800 Ft.	1,490	20%	838	17%	$984 Million	$516 Million

Source: Rye City GIS and Tax Assessor. 2003 Estimated Value.

E. Capability Assessment

The following is a summary of what the City of Rye's capabilities are in terms of responding to a hazard event. This section discusses the City's current capabilities with respect to fire protection, law enforcement, emergency medical care and public works. It also addresses areas of need to improve or enhance emergency response.

1. Rye City Fire Department

The Rye City Fire Department includes a combination of volunteer firefighters and career firefighters that protects a response area of approximately six square miles. The volunteer force makes up the bulk of the membership and is divided into four companies. The department employs one career fire inspector and sixteen career firefighters. They are responsible for staffing each of the City's two firehouses 24 hours a day seven days a week by having three paid members on duty at all times. They also provide basic life support prior to the arrival of emergency medical service, drive the apparatus to alarms and dispatch. The career staff also constitutes the City of Rye Confined Space Rescue Team.

Three volunteer chiefs manage the department. At a major incident or working fire the volunteers respond with initiatives in place to increase trained membership. One of these initiatives has been the Explorer Post, which teaches young men and women about the fire service. This is for members age fourteen to eighteen. Other initiatives include open houses, ads on RCTV and in print as well as word of mouth.

The City has ten pieces of fire department cars and apparatus. All three volunteer chiefs are supplied with an official vehicle. Operating out of two stations (Locust Ave. and Milton Point) are: 3 Engines (w/foam), 2 Aerial ladders, 1 Support Unit (Communications, generator, etc…), 1 Fireboat (31'), and 1 Rescue Boat (14'+ trailer).

The Milton Fire House recently completed a significant renovation and expansion. A renovation of the Locust Fire House, which serves as headquarters, is also scheduled. Measures to ensure that this facility can withstand hazard events, particularly flooding, and to improve vehicle response time from this facility were identified as important emergency response enhancements. In addition, continued training and more equipment to better respond to some hazard events such as hazardous materials incidents were also identified.

2. The City of Rye Police Department

The City Police Department has 40 uniformed personnel and five civilian support personnel. The ranks are broken up as follows: 26 Officers, 7 Sergeants, 3 Lieutenants and 4 Detectives. The Police Commissioner manages the department and also serves as the Emergency Operations Coordinator. All uniformed personnel are trained Certified First Responders (CFR-D) to assist in medical emergencies and trained to use Automated External Defibrillators. To compliment the full time police department there is also an Auxiliary Police made up of fifteen to twenty volunteers. These members are armed and assist police when available with traffic control, crowd control and civil defense.

The City has nineteen police vehicles including 8 marked patrol cars, 5 un-marked cars, 1 DARE truck (Isuzu Rodeo) (Drug Abuse Resistance Education), 1 prisoner transport van, 1 auxiliary police car, 1 electric cart (parking enforcement), 1 US Army surplus truck (w/generator), and a 4x4 truck assigned to the Marine Unit. The Marine Unit has three vessels used for patrol of the Long Island Sound and for search and rescue: 1 Glacier Bay Catamaran (26'), 1 Boston Whaler (19'), and 1 inflatable rescue boat (12').

Technology in the Police Department has improved over the years. Rye now has the availability of Reverse 911, a computer based interactive notification system,

which is capable of making notifications to residences and businesses in either a specific geographic area or the entire City by telephone.

The police station serves as the City's Emergency Operations Center for disaster events. The City of Rye Public Safety Facilities Master Plan found that the headquarters to be inadequate to meet the emergency response and law enforcement needs of the City. Improvements to this facility are included in the City's Capital Improvements Program.

3. Port Chester/Rye/Rye Brook Ambulance Corp.

The Port Chester/Rye/Rye Brook Ambulance Corp. is a combination of paid and volunteer members that respond to about 5,000 medical calls per year within Rye and the adjacent Villages of Port Chester and Rye Brook. There are twenty volunteer and career Emergency Medical Technicians (EMT) and 15 career Paramedics. They have five ambulances with Basic and Advanced Life Support systems for pre-hospital treatment and transport to local hospitals.

4. City of Rye Department of Public Works

The City of Rye Department of Public Works has approximately 57 employees. The department has an extensive range of equipment and 30 vehicles that is used for disaster response, cleanup and recovery as well as a significant number of other equipment and vehicles that serve a variety of uses. The department maintains a significant amount of municipal infrastructure including City roads, sewers, drainage systems and trees. In significant hazard events these facilities are susceptible to damage.

5. *Rye Country Day School Shelter and Evacuation Center*

The following support requirements will be met by the City, County, and private sector agencies. The activation of this shelter will be in coordination with County and American Red Cross efforts to evacuate and shelter residents in multiple jurisdictions in the event of a large scale disaster or major emergency.

- Communications
- Electrical Power
- Food and Water
- Medical Staff
- Medical Supplies
- Public Information
- Record-Keeping

- Sanitation
- Security
- General Supplies

7. *Emergency Operations Center (EOC)*

- The City of Rye EOC is located in Rye Police Headquarters
- Direct communication is provided to all emergency response agencies and providers. Inter-governmental liaisons will be assigned.
- Security will be provided by the Rye Police Department
- News media representatives will not have access to the EOC
- Public Works and Con Edison are responsible for electrical power
- Public Works is responsible for maintaining road access to the EOC
- City Manager's Office is responsible for assigning support personnel
- City Comptroller is responsible for arranging meals for all personnel
- Telecommunications issues will be dealt with by the appropriate agency such as RPD, City Clerk, RACES, local phone company, or Comptroller
- Updated information will be gathered from the Westchester County EOC in White Plains and other available sources such as NYSPIN and the National Weather Service.

IV. HAZARD POLICIES

A. Mission and Goals

The overall mission of the of this hazard mitigation plan is to ***cost-effectively prevent losses by developing partnerships to reduce risk to life and property associated with high priority man-made and natural hazards and to improve City and community response and recovery in the event these hazards occur.*** It is important to highlight that the mission emphasizes *cost-effective* mitigation approaches in recognition of the fiscal limitations of the City. This will require that the City develop *partnerships* and establish *priorities*, which are also included in the City's hazard mitigation mission. Partnerships can help overcome financial challenges but also expand possibilities for more effective implementation strategies and identify shared responsibilities in meeting hazard mitigation objectives.

In support of this mission the following hazard mitigation goals were identified:

- Protect health and safety.
- Protect property and minimize property losses.
- Promote hazard mitigation strategies consistent with other natural resource, land use planning, quality of life and other policies of the City.
- Ensure that public funds are used in the most cost-effective and efficient manner.
- Encourage and facilitate partnerships among public agencies, local governments, citizens, non-profit organizations, businesses and other interests to advance the implementation of hazard mitigation strategies.

The most preferred goals are those that eliminate or reduce the number of facilities and structures within hazard prone areas. Where this goal cannot be realistically achieved enhancing the ability of structures to withstand hazards events should be pursued to minimize impacts. If efforts to avoid or minimize impacts cannot be practically implemented the City should seek to improve its response, recovery and preparedness to hazard events. Enhancing information on and community awareness of hazards are also important goals to advance effective mitigation planning.

B. Existing Policies, Reports and Regulations

There a variety of existing policies, reports and regulations that relate to hazard mitigation. This regulatory framework was evaluated at the local, state and federal level to determine the extent to which existing policies either support, facilitate or hinder hazard mitigation. This review focuses primarily on existing policies that specifically address either hazard mitigation or emergency response or preparedness. Though some were included in this review there are likely many environmental protection, land development, natural resource conservation or other policies and regulations that may support or hinder hazard mitigation efforts.

1. Rye City and Westchester County Policies

a. Flood Mitigation Plan

In 2001 the Rye City Council adopted a Flood Mitigation Plan. The goals and objectives of the plan are to mitigate flooding in the City of Rye by implementing improved and updated structural and non-structural flood mitigation methods. Some flood mitigation strategies outlined in the Flood Mitigation Plan include conducting additional technical studies, amending existing land development regulations, improving drainage systems maintenance, expanding natural resources protection, enhancing emergency services, improving property protection, improving storm-water management and identifying important capital improvements. Adoption of the Flood Mitigation Plan makes the City eligible for funding through FEMA's Flood Mitigation Assistance Program. The plan also qualifies the City to received credit through the FEMA Community Rating System (CRS) program to lower insurance rates for purchases of federal flood insurance.

b. Project Impact

In 1998 The City of Rye is one of two municipalities in New York State to be selected by the Federal Emergency Management Agency (FEMA) as a Project Impact community. The purpose of Project Impact is to promote the creation of disaster resistant communities through aggressive mitigation practices within the community. The City's participation in Project Impact enabled it to obtain detailed Geographic Information System mapping, which served as the foundation for further hydrologic studies and modeling.

c. HAZNY

As a Project Impact community, the City of Rye participated in a Hazard New York (HAZNY) exercise sponsored by NYSEMO. That exercise produced a Hazard Analysis Report for the community (see Appendix A). HAZNY is an automated interactive spreadsheet that asks specific questions on potential hazards in a community. The program also records and evaluates the responses to these questions. HAZNY also includes historical and expert data on selected hazards.

In August 1998 the City of Rye assembled a group of twelve local officials to consider and discuss the questions and issues raised by the HAZNY program. Representatives from NYSEMO facilitated the meeting, recorded the results and produced a Hazard Analysis Report. The report identified and prioritized 23 hazards and recommended that the City investigate mitigation measures to

address the two top rated hazards, which were flooding and hazardous materials in transit.

d. Rye City LWRP

The City's Local waterfront Revitalization Program (LWRP) adopted in 1991 promotes water resource protection. It seeks to encourage the preservation and enhancement of facilities that are dependent upon and are enhanced by the waterfront. The plan is significant in that it requires state and federal agencies to consider proposed actions in terms of their consistency with the 44 policies of the City's LWRP. The LWRP includes a variety of natural resource protection and flood hazard protection policies that are supportive of hazard mitigation, including policy numbers 2, 11, 12, 13, 14, 16, 37 and 44.

e. Rye City Development Plan

The Rye Development Plan (1985), or Master Plan, is a long - range statement by the City's Planning Commission about its goals and policies for the use of land within the City. The plan includes a separate chapter regarding flood control, coastal resources and environmental protection. It recommends a variety of non-structural and structural measures to address flooding concerns. Non-structural goals include encouraging property owners to flood-proof existing buildings, monitoring upstream development for its potential to cause flooding, acquiring floodplain lands for flood control and conservation uses, lobbying for state and federal funding, adopting flexible development regulations to discourage construction in the floodway, and improving the City's flood warning system by installing automated flood gauges throughout the community. Structural solutions include ongoing public works maintenance (e.g., dredging of bridge openings) and improving the Bowman Avenue dam and dredging Blind Brook and Milton Harbor to facilitate stormwater runoff.[11]

f. Rye City Land Development Regulations

The City of Rye has a variety of local laws that support hazard mitigation planning. The City's Subdivision Regulations and Zoning Code regulates the use, intensity and pattern of development in the City. The City is substantially developed so new subdivision opportunities are fairly limited. The Zoning Code requires that residential properties have a minimum lot area of one-half acre when located in a 100-year flood zone, however there are many non-conforming lots.

[11] The 1985 Development Plan also proposed adding floodgates to the Oakland Beach Bridge; this option since has been determined to be infeasible.

The City's Wetlands and Watercourses Law requires the issuance of a permit by the Rye City Planning Commission for any structure and other activity within a wetland, watercourse or its 100-foot buffer. This law seeks to avoid impacts to wetlands and watercourses, which can also be flood prone areas. The law requires the Commission to find prior to the issuance of a permit that the proposed activity will not adversely impact the any of the seven functions of the wetland. The law specifically requires the Commission not issue a permit if the proposed activity will adversely impact flood flows or storage or cause other flood safety concerns.

Chapter 173 of the City Code requires a City permit to grade, excavate, construct, remove vegetation, or alter the flow of surface water. This chapter includes stormwater management and storage requirements and erosion and sediment controls. Enacted in 1975, it requires detention of the 100-year storm event for any development proposing more than 75% impervious surface site coverage, and prescribes maximum discharge rates for the 100- and 25-year storms. This ordinance has resulted in the construction of 11 stormwater management detention basins throughout the city (8 dry; 3 wet). Section 173-5 requires that new construction, excluding building additions, accessory buildings, and surfaces and structures for existing buildings, be referred to the Westchester County Soil and Water Conservation District for comment.

g. Rye City Floodplain Management Regulations

Chapter 100, *Floodplain Management*, of the Rye City Code prohibits the placement of fill within designated flood zone and establishes building criteria for structures within flood prone areas. This law seeks to minimize property damage and maintain the amount of flood flow capacity within the floodway and floodway fringe. For residential structures, the law requires that all habitable space for new construction and substantial improvements[12] to existing structures be elevated to be two feet above the 100-year FEMA-defined flood elevations.

h. Hurricane/Coastal Storm Emergency Response Plan

The Rye City Hurricane/Coastal Storm Emergency Response Plan was drafted in 1997 through cooperation between the City of Rye, Westchester County Department of Emergency and Disaster Services and the New York State Emergency Management Office. The purpose of the plan is to be prepared, and be able to respond to emergencies, in the event of a major coastal storm. The plan was prepared with the primary intent of being an easy to use guide for those who play a direct role in responding to a hurricane or coastal storm threat.

[12] The law defines a "substantial improvement" as any improvement that exceeds 50% of the market value of the structure.

Consistent with that objective the plan is divided into three major parts: An Emergency Operations Center checklist, functional Resources and Responsibilities and City, County and State agency Roles and Responsibilities.

i. Fire Prevention

Chapter 98 of the Rye City Code establishes regulations, consistent with nationally recognized good practice, for the safeguarding to a reasonable degree of life and property from the hazards of fire and explosion arising from the storage, handling and use of hazardous substances, materials and devices, and from conditions hazardous to life or property in the use or occupancy of buildings or premises. The code requires compliance with standards of the National Board of Fire Underwriters or other approved nationally recognized safety standards. This law supports hazard mitigation efforts.

j. Westchester County Non-Point Source Management Plan

Westchester County Non-Point Source Management Plan (1998) was produced in accordance with the "Report and Recommendations (1993)" of the County Executive's Citizen's Committee on Non-Point Source Pollution in Long Island Sound. The document is divided into two sections. The first contains the recommended action plan for the Watershed Advisory Committee 3 (WAC-3) study area of the Long Island Sound watershed. The second assesses specific water quality protection techniques recommended in the first section. The principles of this plan have been endorsed by all of the municipalities that were in the WAC-3 study area. Some of the projects have been implemented including stream bank stabilization.

k. Westchester County Stream Control Law

Enacted by the County in 1956 to address flooding concerns, the Stream Control Law 17 allows the County Department of Public Works to establish channel lines and grades for streams by filing an order with the County Clerk after performing required studies and investigations, preparing a map showing channel lines and grades, and holding a public hearing. The effect of filing an order establishing channel lines and grades is that any person or municipality planning to do work within those lines, or 100 feet there from must apply to the County Commissioner of Public Works for a permit.

The purpose of the law is to prevent obstruction of channel flows and deterioration of stream channels, but its jurisdictional reach is limited. The law was not designed to comprehensively manage stormwater runoff from new development, or prevent increased flood flows or damage from excess runoff. However, for projects that require a permit, conditions may include requiring

zero-increase in runoff, constructing structures above the FEMA 100- year base flood elevation, and erosion controls.

The Stream Control Law applies to 38 miles of stream segments throughout the county, the last of which was added to the program in 1965. Less than 25% of all eligible stream channel lines have been established, primarily due to the expense involved and local concerns. Two miles of Beaver Swamp Brook and four miles of Blind Brook are included under the law.

2. New York State and Federal Policies

a. New York State Building Code

The New York State Uniform Fire Prevention and Building Code is administered by the City Building Department. It establishes minimum guidelines for building construction and fire prevention measures. The City's Central Business District is located within fire limits, which requires more stringent fire prevention and building requirements such as fire resistant building materials and fire sprinklers.

b. National Flood Insurance Program

The City of Rye has participated in the National Flood Insurance Administration's Flood Insurance Program since 1978. The City's floodplain zoning exceeds FIA requirements for participating in the program. In October 1979, the Federal Emergency Management Agency of the FIA issued a Flood Insurance Study for the City, followed in November 1984 by release of the Floodway Boundary and Floodway Maps and the Flood Insurance Rate Maps. The City is considering amending and/or updating these maps based on more accurate mapping and modeling information derived from Project Impact related studies.

c. Federal Disaster Mitigation Act

On October 30, 2000, the President of the United States signed into law the Disaster Mitigation Act of 2000 (Public Law 106-390) to amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988. This new legislation reinforces the importance of pre-disaster mitigation planning to reduce the Nation's disaster losses, and is aimed primarily to control and streamline the administration of federal disaster relief and mitigation programs.

Section 203 establishes a "National Pre-Disaster Mitigation Fund" in order to carry out a program that will "provide technical and financial assistance to States and local governments to assist in the implementation of pre-disaster hazard mitigation measures that are cost-effective and designed to reduce injuries, loss

of life, and damage and destruction of property, including damage to critical services and facilities under the jurisdiction of the States or local governments."

Section 322 provides a new and revitalized approach to mitigation planning by specifically doing the following: Establishes a new requirement for local and tribal mitigation plans, authorizes up to seven percent of the Hazard Mitigation Grant Program (HMGP) funds available to a state to be used for development of state, local and tribal mitigation plans, and provides for states to receive an increased percentage of HMGP funds (from 15 percent to 20 percent) if, at the time of the declaration of a major disaster, they have in effect an approved State Mitigation Plan that meets the factors in the law.

C. Land Use Context and Future Development

The City of Rye is almost completely developed. Less than four new building lots are created in a typical year and few undeveloped parcels remain with significant development potential. Most development activity involves renovation and addition to existing buildings. The predominate land use is single-family residential, which comprises 75 percent of the parcels in the City.

From a hazard mitigation perspective this presents significant challenges since it requires focusing on mitigation measures that correct errors of the past. For instance, current development restrictions require a minimum lot size of one-half acre for properties located in a 100-year flood zone. Had this restriction been in place 100 years ago it is estimated that there would be more than half of the number of properties in flood prone areas than exist today. Applying this one-half acre restriction to future development will have little flood mitigation benefit since most of the properties are already undersized and developed.

Future trends will continue to involve the redevelopment of existing buildings. The more significant the redevelopment the greater the opportunity to bring buildings up to current fire prevention and building code and floodplain management requirements and reduce hazard risk.

Development activity in neighboring communities will need to be monitored. The adjacent communities of Town/Village of Harrison and Village of Rye Brook are up stream neighbors with greater development potential and different land use policies that could impact the City's flood hazard profile.

V. Mitigation Objectives and Strategies

Meaningful hazard mitigation requires a broad array of strategies. This section identifies mitigation strategies for each hazard and an evaluation of the extent to which each strategy supports the goals of this plan. Other implementation considerations are provided in Table 4 including the relative cost of the strategy, its effectiveness in mitigating a hazard, the amount of time necessary for implementation, what parties would be responsible for implementation and where funding for the strategy might come from.

Each objective and strategy listed in Table 4 was evaluated by City Staff and the Hazard Mitigation Committee to determine how it addressed the goals of the plan outlined in Section IV. As expected few strategies advance or support all goals of the plan. Some strategies are more effective than others for certain goals, highlighting the need to have a range of measures to provide a comprehensive hazard mitigation solution for the City.

The cost to implement each strategy is classified as either a "high," "moderate," or "low". High implementation costs were those estimated to exceed $5 million. Moderate costs range between $1 million and $5 million. Low cost was estimated to be less than $1 million to implement.

Each strategy was classified as having either a "high," "moderate," or "low" level of effectiveness. Typically, the higher the cost the greater the effectiveness in reducing or eliminating hazard risk. Cost was not limited to an evaluation of anticipated municipal expenditures, but to any party impacted by implementation. For instance, requiring property owners to elevate structures to address flooding concerns is a strategy that would require little cost to the City, but potentially high costs to individual property owners.

Table 4 also considers the estimated time frame to implement the recommended strategy. A "short-term" time frame is considered to be less than five years. "Long-term" implementation is considered to take more than five years, but in some cases could also be considered an on-going strategy. On going might include strategies involving property acquisition, incentive programs or on-going code enforcement strategies.

All strategies identify who is responsible for there implementation, what existing City policies or programs are necessary for implementation and a possible funding source. Where possible non-City agencies such as non-for-profit organizations, adjacent communities or volunteers were recommended to assist in the implementation (including funding) of a strategy.

A check mark indicates that the City considers the strategy a priority. High priority strategies generally include those that will significantly reduce or eliminate a hazard risk,

enhance emergency response or provide important information from which more detailed mitigation measures can be analyzed or implemented.

A. Flooding, Nor'easter, Hurricane And Other Storms

Objective: Maintain or reduce the number of structures within FEMA-designated 100-year flood zones. [13]

It is estimated that there are approximately 1,200 buildings within designated flood zones in the City (see Table 3). It is recommended that there be reduction in the number of buildings in flood zones, or at a minimum there be no net increase. This objective will be challenging. For example, assuming an aggressive average reduction of six buildings per year it would take over 12 years to gain a modest five percent reduction in the total number of buildings located in designated flood zones. A more realistic but challenging objective therefore is to seek to maintain the current number of buildings within flood zones. The following discusses some strategies to advance this objective.

Strategy: Acquire property, easements or development rights to prevent future development within flood prone areas.

This strategy is among the most effective, but among the most expensive. Land values in Rye, particularly along the water are high and most private property located within flood zones is improved, further increasing acquisition costs. In addition, the City has already acquired many reasonably available vacant properties within flood zones. In 2001-2002 the City of Rye acquired three floodplain properties, Rye Nursery and Rye Meeting House properties along Blind Brook and the Anderson property on Beaver Swamp Brook, all of which are within a designated a flood zone.

The Red Maple Swamp in Rye is an approximately 5-acre area within a 100-year flood zone located immediately north of Playland Parkway and west of Midland Avenue. Within this area includes eight privately-owned and undeveloped properties that should be considered for acquisition. The City already owns four properties within the Swamp and should consider acquiring property, easements or development rights of the remaining privately-owned properties to preserve this environmentally sensitive and flood prone area.

[13] Flooding strategies listed here are intended to reinforce and supplement the goals, objectives and strategies provided in the City's Flood Mitigation Plan (2001).

An alternative acquisition strategy would be to purchase conservation easements or development rights from that portion of the properties located within a flood zone. This strategy would significantly reduce costs and allow existing properties continued development possibilities. Opportunities for such acquisition appear particularly available for oversized properties located along Beaver Swamp Brook or Blind Brook. A more detailed study should be conducted to identify and prioritize the most cost-effective and cost-beneficial property acquisitions. Conservation easements and development rights can be acquired using a variety of tools including reduction of property taxes, use of federal tax credits for the donation of property, and the assistance of organizations such as the Westchester Land Trust in structuring packages to facilitate such transactions.

In light of the City's fiscal constraints fostering partnerships may be one way to best advance acquisition strategies. For instance, the cost of acquiring properties located along the Beaver Swamp Brook might be shared with the adjacent Town/Village of Harrison, which would also benefit from reduced development within the shared flood zone. Harrison and Rye have been successful in securing grant funding for a variety of intermunicipal flood studies and mitigation projects.

Non-profit organizations are another resource to assist in both the acquisition and maintenance of property within flood prone areas. Environmental organizations may be particularly interested in assisting in the acquisition of conservation easements over wetland or other flood prone areas. These organizations also have the technical expertise to help identify, prioritize, preserve and manage ecologically sensitive areas.

Strategy: Strengthen City regulations to further limit future development and redevelopment within flood prone areas.

Rye has a variety of regulations that limit or restrict development within flood prone areas. Many of these regulations are relatively restrictive but could be further enhanced to better support of hazard mitigation policies.

The City Zoning Code requires future subdivisions located within the 100-year flood zone to provide at least ½-acre minimum lot area regardless of the minimum area of the underlying zoning district. Though future subdivision possibilities are limited in the City this provision could be further enhanced to provide for even more restrictive density controls.

The City's Wetlands and Watercourse Law supports flood hazard mitigation by requiring the issuance of a permit from the Planning Commission for activities within or 100-feet from a wetland. This law

could be amended to enhance the restrictions or mitigation requirements when activities are proposed within 100-year flood zones.

The floodplain management law (Chapter 100) prohibits the placement of any fill within a floodway or floodway fringe. Structures are permitted within these areas subject to compliance with certain construction design measures, such as elevating structures or flood-proofing buildings. This law could be amended to further limit development within designated flood zones.

Regulatory enhancements are inexpensive for the City to implement. They impact private property rights and may diminish property values presenting political challenges to implementation. Excessive regulation can also present hardships to property owners and actually work to discourage compliance and the desired effect. Rye's established character, extensive development that pre-dates modern flood mitigation practices and considerable amount of private property developed within flood prone areas means that regulatory changes would take many years to bring these properties into compliance and result in any meaningful flood mitigation impact.

As a result of these implementation challenges a more realistic and effective strategy would involve creating incentives for property owners to comply with flood laws that make structures more hazard resistant (see strategy on page 45).

Objective: ***Increase the number of structures within FEMA-designated 100-year flood zones that are able to withstand flooding hazards.***

Mitigating flood hazards is considered a more practical objective given that Rye is a substantially developed community. The following provides a discussion of strategies that improve the ability of structures located within flood prone areas to withstand or minimize damage from flooding events. These strategies particularly seek to reduce NFIP repetitive loss claims.

Strategy: Explore modifications to Bowman Avenue Dam property or implementation of other upstream regional flood mitigation projects to enhance flood control.

The City should pursue the implementation of planned or programmed projects that have flood mitigation benefits. The current City Capital Improvements Program (CIP) proposes $250,000 in funding for the rehabilitation of the Bowman Avenue Dam. This improvement will enhance the water quality and quantity capabilities of the dam. Preliminary technical studies prepared in connection with Project Impact

suggests that this improvement combined with sediment removal and excavation activities above and below the dam could double its floodwater storage capacity and significantly benefit downstream properties. The Bowman Avenue dam and its related property of approximately 11 acres is an important component in any significant flood control solution because of its strategic location along the Blind Brook and it is owned and controlled by the City of Rye.

The City should also more aggressively explore flood mitigation projects further upstream the Blind Brook. This will require facilitating an inter-municipal partnership with the Village of Rye Brook and Town/Village of Harrison. Given the lower density and existing land use pattern in these communities more land area appears available to accommodate flood control projects that may provide significant reductions in flood elevations in Rye. A hydrologic study similar to that just completed with Rye and Harrison for the Beaver Swamp Brook would be required to identify appropriate properties for flood control projects.

No specific projects were identified to provide flood benefits to coastal areas. Coastal areas require very significant projects that address not only increase in flood elevations during storm events, but also the wave energy impacts typically associated with coastal flooding events.

All mitigation projects should be prioritized in terms of their cost and potential benefit in reducing anticipated flood insurance claims. Flood projects that reduce flood elevations in the Indian Village section of Rye should be considered as a priority since this area has the largest concentration of NFIP repetitive loss claims. Improvements that reduce repetitive loss claims in this area could likely yield a desirable cost/benefit ratio.

Projects should also be evaluated based on their consistency with City natural resource protection and community character policies. For instance, a prior planned project that involved the construction of high walls and channels along Blind Brook is discouraged since it would be inconsistent with sensitive environmental design and the established community character of the City.

Strategy: Improve maintenance of streams and storm drainage infrastructure.

The City should continue to pursue enhancements to the maintenance of its streams and storm drainage systems, especially pre-storm surveillance and maintenance. Removing debris and other obstructions from the Beaver Swamp Brook, Blind Brook, City storm drains and behind the Bowman Avenue Dam can improve their flood flow capacity. Removal of

sediment from strategic locations, such as under bridges and culverts may also enhance flood flows.

Additional funding for the City's Department of Public Works may be necessary to implement this strategy, however some of these increased costs will likely be incurred anyway to address the water quality improvements required by the recently implemented Phase II Regulations. To offset some costs, the City could also encourage volunteers and property owners along the Brooks to assist in regular clean up activities.

Increasing the enforcement of proper erosion control for construction activities within the Blind Brook and Beaver Swamp Brook watersheds can also eliminate or reduce sources of debris and sediment. Erosion can be further managed with appropriate stream stabilization projects.

This strategy has a relatively low implementation cost, but may only provide modest flood capacity benefits for smaller storm events. Improved maintenance practices, however are consistent with other water quality enhancement polices.

Strategy: Amend existing City Laws to better encourage/require existing structures to comply with current flood mitigation construction measures.

The City's floodplain management regulations (Chapter 100 of the Rye City Code) prohibit certain activities or require specific flood resistant construction practices within designated flood zones to reduce flood damages and maintain the capacity of the floodplain. This law applies to all new structures. An existing structure is not required to comply with this law provided there is no "substantial modification". Under the current law a "substantial modification" (such as the construction of an addition to a residence) is defined as one that exceeds 50% of the market value of the property. Once this threshold is exceeded the entire structure needs to comply with the requirements of the floodplain management law. Typically, this means that all habitable space needs to be elevated above the 100-year flood elevation.

Market values in Rye are high, especially for single-family homes. In recent years these values have significantly outpaced construction costs. Consequently, substantial high value improvements are made and not required to comply with current floodplain requirements. In 2001 the median sales price of a single-family home was $785,000. Under current law a modification or addition to the median valued home in the City would need to exceed $390,000 before either the existing or new structure would be required to comply with the floodplain management law. This threshold is rarely exceeded.

The City should consider amending Chapter 100 to modify the definition of "substantial improvement" to require more structures to meet current floodplain construction design requirements when modifications are proposed. One possibility would be to lower the percentage of market value for all properties within a flood zone or possibly limit this more restrictive provision to NFIP repetitive loss properties.

The City could also consider amendments to the Rye City Zoning Code to bring non-conforming properties into compliance with current setback and other development restrictions. This would be particularly applicable to the Membership Club (MC) District, which has a number of membership clubs that sustain regular storm damage and include many structures that are within designated setbacks.

Changes in regulations that more aggressively advance flood mitigation policies also need to balance the potential impact such changes may have on community character. For example, flood requirements typically require elevating structures above the 100-year flood stage for new development or substantial modifications. This requirement can significantly change the character of a neighborhood if the new structure is not sensitively designed.

The implementation cost of this strategy is low and could be funded by the City within existing budgetary constraints. Changes in regulations impact private property rights and may increase construction costs for some improvements presenting political challenges to implementation. Rye's established character and considerable amount of private property developed within flood prone areas means that regulatory changes would take many years to bring these properties into compliance and result in any meaningful flood mitigation impact.

Strategy: Explore funding sources for the cost for or provide incentives to encourage flood resistant construction for existing structures.

The City could provide financial assistance to property owners that retrofit existing structures to provide more flood resistant construction. Preference could be given to properties with NFIP repetitive loss claims.

One common mitigation measure involves elevating structures, which can be expensive, ranging between $50,000 and $100,000 per single-family home. This strategy however has been implemented in some communities in the region, including Westport and Milford, Connecticut. These communities have been successful in demonstrating the cost effectiveness of these projects and securing federal grants to subsidize mitigation costs.

Funding for such improvements would likely require the City to secure a grant. The City might also consider encouraging flood mitigation improvements by reducing or waving building permit fees or other financial incentives.
The cost of implementing this strategy is high and would likely require funding from grants or other non-City source. The effectiveness of this measure however is high.

The City should also consider modifying land use controls for structures complying with the City's flood law. For instance, habitable space in residential structures is required to be elevated two feet above the 100-year flood elevation. In some cases certain zoning controls (such as building height, floor area ratio (FAR), and maximum story height) can be exceeded requiring variances or significant loss of development potential. Providing relief from these land use restrictions should be considered by the City Council.

Objective: Enhance information regarding flood hazard risks and vulnerable structures.

An important component in developing effective flood mitigation strategies is to continue to acquire and develop more accurate and detailed information regarding flood risks and vulnerable structures.

Strategy: Improve the accuracy of GIS-based FEMA flood zone mapping.

The current FEMA Flood Insurance Rate Maps for the City were last revised in 1984. As recommended in the Flood Mitigation Plan, the City should pursue updating these maps based on more accurate topographic, land use and other available information. Much of this work has already been completed for the Beaver Swamp Brook in connection with Project Impact studies. However, a similar hydrological analysis would be required for the Blind Brook before more accurate flood mapping can be completed. All mapping should be in digital format and designed to match the information in the City's current Geographic Information System (GIS) database. Grants or shared intermunicipal funding with adjacent communities would be a likely source of funding for this project. Any municipal mapping effort should be coordinated with other New York State or County flood mapping revisions that may be ongoing.

Strategy: Restore and add flood gauges on Blind Brook and Beaver Swamp Brook.

The City should lobby for the restoration of the regional flood gauging programs to restore early flood warning capabilities to the City and

surrounding communities. Previously, these systems were maintained by Westchester County, which discontinued funding for this program. The City should lobby the County to re-institute funding for this program or consider sharing in the cost of funding stream gauges with other upstream or downstream communities. The stream gauges would provide not only early warning benefits but also historical stream flow data to improve the accuracy of predicted storm events.

Objective: Enhance the public awareness of flood hazards and possible mitigation strategies.

This objective recognizes the importance of improving the public awareness of potential flood hazards as a mitigation measure.

Strategy: Enhance information made available on City website, RCTV and other local media with respect to flood mitigation, preparedness and the National Flood Insurance Program.

City staff using existing City resources could administer this low cost strategy. The City could also facilitate greater interest by local media by disseminating flood risk and mitigation information. Considerable information is also available from State and Federal agencies that could assist in preparing outreach documentation. The City could also update and distribute the 2002 City of Rye Emergency Management Guide.

Strategy: Meet FEMA community rating standards (CRS) to lower flood insurance rates.

The City should investigate applying to FEMA to meet the requirements of the Community Rating Standards (CRS). Once approved as a CRS community, the City will enjoy a reduction in flood insurance premiums for properties within the 100-year flood zone. A key component of CRS compliance is enhancing outreach and available of information regarding flood hazards to property owners and businesses in the City. The CRS program is a sliding scale that enables communities that impose greater restrictions on floodplain development to achieve greater flood insurance premium reductions. Full compliance with CRS requirements may add administrative or other cost burdens to the City, particularly to the Building Department, which may require additional staff or funding to meet CRS requirements.

Strategy: Establish partnerships with local business and real estate community to improve awareness of flood risks.

The City could enhance flood hazard awareness among local businesses and facilitate greater participation of the business community in assuming more flood mitigation responsibilities. Partnerships with the real estate community would be particularly helpful in conveying accurate flood hazard information to homebuyers.

Strategy: Conduct informational workshops to advise homeowners and contractors of preferred construction practices in flood zones.

The City could conduct informational workshop to encourage homeowners and contractors to implement flood resistant construction measures. This strategy would cost little to implement.

Objective: Enhance emergency response, recovery and preparedness to flood events.

Improving emergency response does not mitigate flood risk before it happens, however it can reduce the impact of a flooding event after it occurs. Since September 2004 there have been three major floods in Rye. Pre- and post-flood response by City Public Works forces and emergency service providers continues to improve. There continues to be, however, opportunities to improve response and enhance warning and notification of hazard events.

Strategy: Complete renovations to City Police and Fire Headquarters.

The Milton Fire House and Fire Headquarters on Locust Avenue have recently completed reconstruction and expansion projects that were authorized in a recently adopted bond referendum.

The City Police Station requires a substantial renovation or relocation to meet the current needs of the department. Funding for this facility, which also serves as the City's emergency operations center for hazard events, has not been approved. These facilities are the cornerstone of the City's hazard response and essential to effective emergency services. Funding for these projects is likely a bond referendum, however, other funding sources may be available from federal sources such as hazard mitigation grants from FEMA or security enhancements funding from the Department of Homeland Security.

Strategy: Reactivate early flood warning system.

The City should lobby for the restoration of the regional flood gauging programs to restore early flood warning capabilities to the City and surrounding communities. Previously, these systems were maintained by Westchester County, which discontinued funding for this program. The City should lobby the County to re-institute funding for this program or consider sharing in the cost of funding stream gauges with other upstream or downstream communities.

Strategy: Review or establish evacuation and emergency response plans for major recreational uses such as Playland and beach clubs.

City emergency service providers should continue to review and coordinate evacuation plans with Westchester County and adjacent communities. There should be particular emphasis on the evacuation plans for facilities with high seasonal occupancies such as Playland and the beach clubs. Advance planning is a low cost strategy that yields significant benefits in the event of a major storm.

Strategy: Keep an updated inventory of all areas within the City with dock access and small boat craft that can be used in the event of flood emergencies.

The City Police Department/Emergency Operations Center should conduct an outreach program with residents and businesses to identify owners of small boats that could be used for evacuation purposes in a major flooding event.

B. Hazardous Materials

Objective: Reduce the number of sensitive facilities within the hazardous materials corridor or near known hazardous materials sites.

This objective seeks to reduce risk and potential exposure to hazardous materials by reducing the number of sensitive facilities within hazard prone areas. This objective will be challenging to implement given the City's developed character and large number of structures within proximity of Interstates I-95 and I-287 and the Metro-North railroad, which bisects the City. An additional challenge will be that more restrictive City regulations may be pre-empted by State and Federal laws. This objective does not seek to limit all structures only sensitive ones that would be most impacted by a hazardous materials event. These facilities include those that involve a large concentration of people (especially outdoors), child or adult day

care facilities or emergency service facilities.

Strategies that achieve this objective are listed below and emphasize changes in City land use regulations and increasing enforcement of existing law regarding the handling and storing of hazardous materials. These strategies are relatively inexpensive to implement though there may need to be some increases in City Staff or time to expand enforcement activities.

Strategy: Amend land use regulations to restrict sites using hazardous materials within proximity of sensitive facilities such as school or high-density population areas.

Strategy: Lobby for changes in state and federal legislation regarding the types or time of day hazardous materials are transported on interstates.

Strategy: Strictly enforce (as permitted by law) hazard materials traveling on local roads.

Strategy: Strictly enforce laws for facilities handling or storing hazardous materials.

Strategy: Where feasible consider relocating emergency service facilities from within hazardous materials transportation corridor.

Objective: Increase the number of structures that are able to withstand impacts associated with hazardous materials events.

Where avoidance of exposure to hazardous materials cannot be practically achieved the City should increase the number of structures and facilities that can withstand impacts associated with hazardous material events. Strategies that advance this objective are generally more expensive to implement since they involve retrofitting of existing structures or acquiring new equipment. Partnerships with other New York State and Westchester County Agencies will likely be necessary to implement these strategies.

Strategy: Consider retrofitting of existing critical facilities to withstand impacts associated with hazardous materials spills.

Strategy: Identify storm drain outfalls near or along major transportation routes or known hazardous materials site and provide mitigation measures to prevent the conveyance of spilled hazardous materials into adjacent waterways.

Strategy: Provide emergency service providers and others unable to relocate during hazardous materials event with necessary personal protective equipment.

Strategy: Ensure that hazardous materials sites have in place proper spill mitigation and containment measures.

Strategy: Confirm ability of Westchester County Blind Brook Sewage Treatment to provide continuous operation during major flooding event. The City of Rye should partner with the County to provide upgrades or mitigation as deemed necessary.

Objective: Better assess the City's exposure to hazardous materials events.

The diversity of hazardous materials and their potential health risk is a complex and evolving topic. The City should implement strategies that seek to better identify the nature of materials in the community. Additional analysis should also be conducted to better assess the City's exposure in the event a hazardous material incident occurs. Acquiring this information will likely require additional expertise beyond that currently available from City Staff. Officials from appropriate County or State Agencies could be of assistance.

Implementation of the following strategies is relatively low in cost and considered to have high effectiveness since it provides information that can provide for more effective mitigation measures.

Strategy: Conduct more specific review of sites with or vulnerable to hazardous materials.

Strategy: Establish more specific information or modeling of hazardous material spill and containment areas

Objective: Improve awareness of hazardous materials and possible mitigation strategies.

Enhancing the communities' awareness of hazardous materials in the City and possible mitigation strategies will better prepare the community in case a hazardous materials event occurs. Making this information available on the City website is a cost effective means of implementing this strategy. Providing links or access to currently available resources prepared by other agencies would further reduce implementation costs.

Strategy: Facilitate the distribution of "right to know" information and location of hazardous materials sites in the community.

Strategy: Provide information to residents and businesses regarding hazardous material risks and how to respond in the event a disaster occurs.

Objective: Enhance hazard response, recovery and preparedness

Improving response, recovery and preparedness to hazardous materials events is considered the most practicable objective. The following strategies emphasize enhancements in current planning, training and equipment for the City's Police and Fire Departments. These strategies will require partnerships between the City emergency service providers, Westchester County and area municipalities. Grants and other outside funding sources will likely be required due to the high cost of implementation of some of the strategies.

Strategy: Complete renovations to City Police and Fire Headquarters.

Strategy: Encourage and assist local medical center to pursue funding for the construction and installation of a mass decontamination corridor as well as other integrated protective systems to prevent contamination of the medical facility.

Strategy: Establish emergency response plans for hazardous materials incidents.

Strategy: Enhance training of emergency service providers and pursue funding for appropriate protective gear and equipment.

Strategy: Identify and or be provided advance warning of the types of hazardous materials traveling on major transportation routes.

C. Fire, Explosion, Earthquake, Tornado and Structural Collapse

Objective: Increase the number of structures that are more resistant to fire or collapse.

Strategies that reduce the potential for fire, explosion, earthquakes, tornado or structural collapse should be encouraged. In many cases this involves confirmation of compliance with existing New York State Building Codes. Rye's building stock is old, however it is being upgraded and redeveloped offering opportunities to meet current fire prevention and building code requirements. The following suggests additional strategies to either require or create incentives to encourage more structures to meet current requirements. The cost of these strategies is low for the City. Most costs would be borne by private property owners in meeting fire or building code regulations. The effectiveness of these strategies is considered high, but will take many years to implement, as each new

structure is upgrade. The Rye City Building Department or Fire Inspector may require more code compliance inspections. Changes in existing local regulations or implementation of incentives will require approval of the City Council.

Strategy: Ensure compliance with NYS Building Code to upgrade or eliminate poor building construction.

Strategy: Consider incentives such as reduced building fees to encourage the retrofitting of existing buildings within City Fire Limits to meet current NYS Building Code requirements.

Strategy: Consider requiring or providing incentives for the installation of sprinklers for single-family residences.

Objective: Obtain more information and raise awareness regarding fire, explosion or collapse risks in the City.

The City should implement strategies that seek to acquire more information regarding potential fire and explosions threats or structures that may be vulnerable to collapse. The location of these threats should be identified so that mitigation measures can be appropriately defined. The City should also conduct more community outreach to raise fire awareness and proper fire prevention measures. Partnerships with local schools, businesses and community organizations will be a useful resource in this outreach process. The following strategies to advance this objective are considered low cost, but may require additional administrative time by the Rye City Building Department and Fire Inspector.

Strategy: Conduct inventory of buildings not meeting current NYS Building Code requirements.

Strategy: Conduct inventory of sites or facilities that may be prone or vulnerable to explosions.

Strategy: Enhance fire safety awareness information and make such information more widely available via City website, RCTV and to local homeowners and businesses.

Strategy: Enhance building and fire inspections to ensure compliance with applicable building code and fire safety laws. Consider voluntary inspections of buildings (where not required by law) with amnesty provision to suggest building construction and fire safety improvements.

Objective: Enhance hazard response, recovery and preparedness

In addition to prevention strategies the City should improve its ability to respond to and recover from a fire, collapse or other hazard events. The following strategies identify mitigation projects that will improve response of emergency service providers to hazard events. Enhanced training is also encouraged. These strategies can be expensive to implement and may require additional capital improvement or budget funding from the City Council or other outside sources such as state or federal grants.

Strategy: Complete renovations to City Police and Fire Headquarters.

Strategy: Consider roadway or traffic signal improvements to reduce emergency vehicle response time from Locust Fire House.

Strategy: Encourage and enhance training of Fire Department personnel.

D. Terrorism and Airplane Crash

Objective: Decrease the number of structures that are vulnerable to Terrorist Events or Airplane Crashes

The City should implement strategies that identify and reduce the City's vulnerability to terrorist attacks airplane crashes. The City will need to monitor changes in conditions that may make the City more vulnerable to these hazard events, such as changes in the flight paths to regional airports. Terrorism and airplane crashes require partnerships with adjacent communities, local businesses, schools and federal, state and county transportation and security agencies. Since the following strategies emphasize data collection and monitoring the cost of implementation is considered low. The City's Police and Fire Departments would be primarily responsible for implementing these strategies.

Strategy: Conduct discrete inventory of potential terrorist targets within City and appropriate security measures.

Strategy: Improve security measures at emergency response facilities and other sensitive facilities.

Strategy: Monitor changes in flight paths to Westchester County or other regional airports that may impact the City.

Objective: Enhance Information and awareness of terrorism and airplane crash risks and vulnerabilities

Enhancements in information and awareness of threats are critical to being able to prevent and prepare for terrorist attacks or airplane crashes. The following provides strategies for improving coordination of City emergency service providers with County officials. Also suggested is a strategy to conduct more outreach with the community regarding appropriate responses to terrorist threats or airplane crashes. These strategies will best be implemented at the lowest possible cost by developing partnerships with appropriate governmental agencies and local interest groups and institutions.

Strategy: Improve coordination with Westchester County regarding airport emergency planning and terrorism threats at Indian Point Nuclear Power Plant or other potential terrorist targets.

Strategy: Provide more information to residents and businesses regarding security measures and what to do in the event of a terrorist event or airplane crash.

Objective: Enhance hazard response, recovery and preparedness

In addition to prevention strategies the City should improve its ability to respond to and prepare for terrorist attacks or airplane crashes. The following strategies identify mitigation projects that will improve response of emergency service providers to hazard events. Enhanced training is also encouraged. These strategies can be expensive to implement and may require additional capital improvement or budget funding from the City Council or other outside sources such as state or federal grants.

Strategy: Complete renovations to City Police and Fire Headquarters.

Strategy: Enhance training and equipment of emergency service personnel.

Strategy: Initiate a maritime EMS project to address medical emergencies occurring within Long Island Sound.

Strategy: Improve coordination with area hospitals to identify that training, equipment and contingency plan are in place to respond to mass casualty incidents.

E. Drought, Water Supply Failure and Heat Wave

Objective: Increase the City's resistance to drought, water supply failure and heat wave

The City should work with utility service provides and local critical facilities such as schools, senior and medical facilities to increase the City's resistance to drought, water supply failure and heat waves. Implementing conservation practices would also reduce the City's vulnerability to these hazard events. In addition, ensuring that the City's critical facilities have appropriate backup measures and alternative water supply and power systems will help minimize the impact of these hazards. The cost of implementing the following strategies is low since it emphasizes coordination and preparedness.

Strategy: Consider amending local legislation to encourage greater water conservation practices.

Strategy: Coordinate with or assist local water service providers in identifying vulnerabilities in water supply system and leaks.

Strategy: Improve coordination with local senior facilities to determine whether additional support is necessary in the event of a heat wave.

Strategy: Improve coordination with local and regional power service providers.

Strategy: Ensure that critical facilities in the City have appropriate backup generation capabilities.

Objective: Improve awareness of hazards and possible mitigation strategies

The City should work with utility service provides and local critical facilities such as schools, senior and medical facilities to increase the City's awareness of drought, water supply failure and heat wave hazards. Providing more information regarding conservation practices would also reduce the City's vulnerability to these hazard events. More training of emergency personnel is an additional mitigation measure that should be implemented.

Strategy: Provide more information to residents and businesses regarding water conservation practices.

Strategy: Enhance training and equipment of emergency service personnel.

TABLE 4
Hazard Mitigation Strategies and Implementation Considerations
(See Section V, Mitigation Objectives and Strategies, for a Description of this Table)

	Plan Goals Addressed					Cost	Effective-ness	Time Frame	Responsibility and *Existing Programs Necessary for Implementation*	Funding
	Property Protection	Health and Safety	City Policy Consistency	Cost Effectiveness	Facilitates Partnerships					
Flooding, Nor'easter, Hurricane And Other Storms										
Objective: Maintain or reduce the number of structures within FEMA-designated 100-year flood zones.										
Acquire property, easements or development rights to prevent future development within flood prone areas.	■	■	■		■	High	High	Long-Term	City, Non-profits *Capital Improvements Program*	City, Non-profits
✓ Strengthen City regulations to further limit future development and redevelopment within flood prone areas.	■	■	■	■		Low	Moderate	Long-Term	City Council *City Code Revisions Building Enforcement*	City
Objective: Increase the number of structures within FEMA-designated 100-year flood zones that are able to withstand flooding hazards.										
✓ Explore modifications to Bowman Avenue Dam property or implementation of other upstream regional flood mitigation projects to enhance flood control.	■	■			■	High	Moderate/ High	Long-Term	City, Adjacent Communities *Capital Improvements Program*	Grants, Intermunicipal
Improve maintenance of streams and storm drainage infrastructure.			■	■	■	Low	Low	Short-Term	City DPW, Volunteers *Capital Improvements Program, Budget*	City, Volunteers

	Plan Goals Addressed									
	Property Protection	Health and Safety	City Policy Consistency	Cost Effectiveness	Facilitates Partnerships	**Cost**	**Effective-ness**	**Time Frame**	**Responsibility and *Existing Programs Necessary for Implementation***	**Funding**
✓ Amend existing City Laws to better encourage/require existing structures to comply with current flood mitigation construction measures	■	■		■		High	Moderate	Long-Term	City Council *City Code Revisions, Building Enforcement*	City
Explore funding sources for the cost for or provide incentives to encourage flood resistant construction for existing structures	■	■		■		High	Moderate/ High	Long-Term	City, Property Owners *Capital Improvement Program*	Grants, City, Property Owners
Objective: Enhance information regarding flood hazard risks and vulnerable structures.										
✓ Improve the accuracy of GIS-based FEMA flood zone mapping.		■			■	Mod.	Moderate	Long-Term	City, Intermunicipal *Capital Improvements Program, Budget*	Grants, Intermunicipal
Restore and add flood gauges on Blind Brook and Beaver Swamp Brook.		■		■	■	Low	Moderate	Short-Term	City, Intermunicipal *Capital Improvements Program, Budget*	Grants, Intermunicipal
Objective: Enhance the public awareness of flood hazards and possible mitigation strategies.										
Enhance information made available on City website, RCTV and other local media with respect to flood mitigation, preparedness and the National Flood Insurance Program.			■	■		Low	Low	Short-Term	City Manager *Budget*	City
Meet FEMA community rating standards (CRS) to lower flood insurance rates.	■		■	■		Low	Moderate	Short-Term	City Building Dept *Budget*	City

	Plan Goals Addressed					Cost	Effectiveness	Time Frame	Responsibility and *Existing Programs Necessary for Implementation*	Funding
	Property Protection	Health and Safety	City Policy Consistency	Cost Effectiveness	Facilitates Partnerships					
Establish partnerships with local business and real estate community to improve awareness of flood risks.			■	■	■	Low	Moderate	Short-Term	City *Budget*	City
Conduct informational workshops to advise homeowners and contractors of preferred construction practices in flood zones	■			■	■	Low	Moderate	Short-Term	City *Budget*	City
Objective: Enhance emergency response, recovery and preparedness to flood events.										
✓ Complete renovations to City Police and Fire Headquarters		■	■			High	Moderate	Short-Term	City *Capital Improvements Program*	City, grants
✓ Reactivate early flood warning system		■		■	■	Low	Moderate	Short-Term	City, Intermunicipal	Grants, Intermunicipal
✓ Review or establish evacuation and emergency response plans for major recreational uses such as Playland and beach clubs.		■		■	■	Low	High	Short-Term	City, intermunicipal	City
Keep and updated inventory of all areas within the City with dock access and small boat craft that can be used in the event of flood emergencies.		■		■	■	Low	Moderate	Short-Term	City	City
HAZARDOUS MATERIALS										

	Plan Goals Addressed									
	Property Protection	Health and Safety	City Policy Consistency	Cost Effectiveness	Facilitates Partnerships	**Cost**	**Effective-ness**	**Time Frame**	**Responsibility and *Existing Programs Necessary for Implementation***	**Funding**
Objective: Reduce the number of sensitive facilities within the hazardous materials corridor or near known hazardous materials sites.										
Amend land use regulations to restrict sites using hazardous materials within proximity of sensitive facilities such as school or high-density population areas.		■	■	■		Low	Moderate	Long-Term	City Council *Code Revisions*	City
Lobby for changes in state and federal legislation regarding the types or time of day hazardous materials are transported on interstates.		■		■	■	Low	Low	Long-Term	City Council	City
Strictly enforce (as permitted by law) hazard materials traveling on local roads.		■		■		Low	Moderate	Short-Term	City Police/Fire *Code Enforcement*	City
Strictly enforce laws for facilities handling or storing hazardous materials.		■		■		Low	Moderate	Short-Term	City Police/Fire *Code Enforcement*	City
Where feasible consider relocating emergency service facilities from within hazardous materials transportation corridor.	■	■	■			High	High	Long-Term	City *Capital Improvements Program*	City
Objective: Increase the number of structures that are able to withstand impacts associated with hazardous materials events.										
Consider retrofitting of existing critical facilities to withstand impacts associated with hazardous materials spills.	■	■				High	Moderate	Long-Term	City *Capital Improvements Program*	City

	Plan Goals Addressed									
	Property Protection	Health and Safety	City Policy Consistency	Cost Effectiveness	Facilitates Partnerships	**Cost**	**Effective-ness**	**Time Frame**	**Responsibility and *Existing Programs Necessary for Implementation***	**Funding**
✓ Identify storm drain outfalls near or along major transportation routes or known hazardous materials site and provide mitigation measures to prevent the conveyance of spilled hazardous materials into adjacent waterways.	■	■	■	■		Mod.	Moderate	Short-Term	City Engineer *Capital Improvements Program, Budget*	City, Intermunicipal non-profits
✓ Provide emergency service providers and others unable to relocate during hazardous materials event with necessary personal protective equipment.		■	■			Mod.	Moderate	Short-Term	City Police/Fire *Capital Improvements Program, Budget*	City, Grants
Ensure that hazardous materials sites have in place proper spill mitigation and containment measures.		■		■	■	Low	Moderate	Short-Term	City Building/Fire *Code Enforcement*	City
Confirm ability of Westchester County Blind Brook Sewage Treatment to provide continuous operation during major flooding event. The City of Rye should partner with the County to provide upgrades or mitigation as deemed necessary.	■	■	■		■	Mod	Moderate	Short-Term	City Engineer *Capital Improvements Program*	City, County, Grants
Objective: Better assess the City's exposure to hazardous materials events.										
Conduct more specific review of sites with or vulnerable to hazardous materials.		■	■			Low	Moderate	Short-Term	City Building/Fire *Code Enforcement*	City

	Plan Goals Addressed									
	Property Protection	Health and Safety	City Policy Consistency	Cost Effectiveness	Facilitates Partnerships	**Cost**	**Effective-ness**	**Time Frame**	**Responsibility and *Existing Programs Necessary for Implementation***	**Funding**
Establish more specific information or modeling of hazardous material spill and containment areas		■	■			Mod	Moderate	Short-Term	City Engineer *Budget*	City, Intermunicipal Non-profits
Objective: Improve awareness of hazardous materials and possible mitigation strategies.										
Facilitate the distribution of "right to know" information and location of hazardous materials sites in the community.		■		■	■	Low	Low	Short-Term	City Fire Inspector *Budget, Code Enforcement*	City, grants
Provide information to residents and businesses regarding hazardous material risks and how to respond in the event a disaster occurs.		■		■	■	Low	Low	Short-Term	City Fire Inspector *Budget, Code Enforcement*	City, grants
Objective: Enhance hazard response, recovery and preparedness										
✓ Complete renovations to City Police and Fire Headquarters.		■	■			High	Moderate	Short-Term	City *Capital Improvements Program*	City, grants
Encourage and assist area hospitals to pursue funding for the construction and installation of a "mass decontamination corridor" as well as other integrated protective systems to prevent contamination of the medical facility.		■			■	Low	Moderate	Short-Term	City, Partners *Budget*	City, Partners, Grants
Establish emergency response plans for hazardous materials incidents.		■		■	■	Low	Moderate	Short-Term	City, Partners *Budget*	City, Grants

	Plan Goals Addressed									
	Property Protection	Health and Safety	City Policy Consistency	Cost Effectiveness	Facilitates Partnerships	**Cost**	**Effective-ness**	**Time Frame**	**Responsibility and *Existing Programs Necessary for Implementation***	**Funding**
✓ Enhance training of emergency service provides and pursue funding for appropriate protective gear and equipment.		■			■	Low	Moderate	Short-Term	City, Partners *Budget*	City, Grants
Fire, Explosion, Earthquake, Tornado and Structural Collapse										
Objective: Increase the number of structures that are more resistant to fire or collapse.										
✓ Ensure compliance with NYS Building Code to upgrade or eliminate poor building construction.	■	■	■	■		Low	High	Short-Term	City Building/Fire *Code Enforcement*	City
Consider incentives such as reduced building fees to encourage the retrofitting of existing buildings within City Fire Limits to meet current NYS Building Code requirements.	■	■	■		■	Low	Moderate	Long-Term	City Building/Fire *Code Enforcement*	City
Consider requiring or providing incentives for the installation of sprinklers for single-family residences.	■	■		■		Low	High	Long-Term	City Council *Code Revisions*	City, Private Property owners
Objective: Obtain more information and raise awareness regarding fire and collapse risks in the City.										
Conduct inventory of buildings not meeting current NYS Building Code requirements.		■	■			Low	Moderate	Short-Term	City Building Dept. *Budget*	City

	Plan Goals Addressed									
	Property Protection	Health and Safety	City Policy Consistency	Cost Effectiveness	Facilitates Partnerships	**Cost**	**Effective-ness**	**Time Frame**	**Responsibility and *Existing Programs Necessary for Implementation***	**Funding**
Conduct inventory of sites or facilities that may be prone or vulnerable to fire, explosions or collapse.		■	■	■		Low	Moderate	Short-Term	City Building Dept. *Budget*	City
Enhance fire safety awareness information and make such information more widely available via City website, RCTV and to local homeowners and businesses.		■		■	■	Low	Moderate	Short-Term	City Fire/Building, Partners *Budget*	City and Partners
✓ Enhance building and fire inspections to ensure compliance with applicable building code and fire safety laws. Consider voluntary inspections of buildings (where not required by law) with amnesty provision to suggest building construction and fire safety improvements.		■		■	■	Low	Moderate	Short-Term	City Building/Fire *Code Enforcement*	City
Objective: Enhance hazard response, recovery and preparedness										
✓ Complete renovations to City Police and Fire Headquarters.		■	■			High	Moderate	Short-Term	City *Capital Improvements Program*	City, grants
✓ Consider roadway or traffic signal improvements to reduce emergency vehicle response time from Locust Fire House.		■				High	Moderate	Short-Term	City	

	Plan Goals Addressed					Cost	Effective-ness	Time Frame	Responsibility and *Existing Programs Necessary for Implementation*	Funding
	Property Protection	Health and Safety	City Policy Consistency	Cost Effectiveness	Facilitates Partnerships					
Encourage and enhance training of Fire Department personnel.		■	■							
Terrorism and Airplane Crash										
Objective: Decrease the number of structures that are vulnerable to Terrorist Events or Airplane Crashes										
Conduct discrete inventory of potential terrorist targets within City and appropriate security measures.		■		■	■	Low	Moderate	Short-Term	City Police/Fire, Partners *Budget*	City, grants
Improve security measures at emergency response facilities and other sensitive facilities.		■			■	Low	Moderate	Short-Term	City Police/Fire, Partners *Budget*	City, grants
Monitor changes in flight paths to Westchester County or other regional airports that may impact the City.		■		■	■	Low	Moderate	Long-Term	City	City
Objective: Enhance Information and awareness of terrorism and airplane crash risks and vulnerabilities										
✓ Improve coordination with Westchester County regarding airport emergency planning and terrorism threats.		■	■	■	■	Low	High	Short-Term	City Police/Fire, Partners *Budget*	City
Provide more information to residents and businesses regarding security measures and what to do in the event of a terrorist event or airplane crash.		■		■	■	Low	Moderate	Short-Term	City Police/Fire, Partners *Budget*	City

	Plan Goals Addressed					Cost	Effectiveness	Time Frame	Responsibility and *Existing Programs Necessary for Implementation*	Funding
	Property Protection	Health and Safety	City Policy Consistency	Cost Effectiveness	Facilitates Partnerships					
Objective: Enhance hazard response, recovery and preparedness										
✓ Complete renovations to City Police and Fire.		■	■			High	Moderate	Short-Term	City *Capital Improvements Program*	City, grants
✓ Enhance training and equipment of emergency service personnel.		■	■			Mod	High	Short-Term	City Police/Fire, Partners *Budget*	City, grants
Initiate a maritime EMS project to address medical emergencies occurring within Long Island Sound.		■	■			Mod	Moderate	Long-Term	City Police/Fire, Partners *Budget*	City
Improve coordination with area hospitals to identify that training, equipment and contingency plan are in place to respond to mass casualty incidents.		■	■	■	■	Low	High	Short-Term	City Police/Fire, Partners *Budget*	City
Drought, Water Supply Failure and Heat Wave										
Objective: Increase the City's resistance to drought, water supply failure and heat wave										
1. Consider amending local legislation to encourage greater water conservation practices.			■	■		Low	Moderate	Long-Term	City Council *Code Revisions*	City

	Plan Goals Addressed									
	Property Protection	Health and Safety	City Policy Consistency	Cost Effectiveness	Facilitates Partnerships	**Cost**	**Effective-ness**	**Time Frame**	**Responsibility and *Existing Programs Necessary for Implementation***	**Funding**
Coordinate with or assist local water service providers in identifying vulnerabilities in water supply system and leaks.		■		■	■	Low	Moderate	Short-Term	City Engineer, Partners *Budget*	City, Utility Providers
Improve coordination with local senior facilities to determine whether additional support is necessary in the event of a heat wave.		■		■	■	Low	Moderate	Short-Term	City, Partners *Budget*	City
Improve coordination with local and regional power service providers.		■		■	■	Low	Moderate	Short-Term	City, Partners *Budget*	City, Partners
✓ Ensure that critical facilities in the City have appropriate backup generation capabilities.		■		■		Mod.	High	Short-Term	City, Partners *Budget*	City, Partners
Objective: Improve awareness of hazards and possible mitigation strategies										
Provide more information to residents and businesses regarding water conservation practices.			■	■	■	Low	Moderate	Short-Term	City, Partners *Budget*	City, Partners, Grants
Enhance training and equipment of emergency service personnel.		■				Mod	Moderate	Short-Term	City Fire/Police *Budget*	City, Grants

VI. PLAN IMPLEMENTATION AND MONITORING

This section of the hazard mitigation plan discusses the planning process for the preparation and adoption of the plan. It also addresses how the action strategies outlined in Section V of the plan will be incorporated into existing City programs. This section concludes with a description of the measures that will be implemented to monitor the plan's progress, evaluate the effectiveness of the plan and provide for updates to the plan.

A. Hazard Plan Preparation and Adoption

1. Hazard Planning Process and Public Input

The hazard mitigation planning process involved five steps including 1) Creation of Hazard Planning Team; 2) Hazard Identification and Prioritization; 3) Risk Assessment and Vulnerabilities; 4) Policy Review and Mitigation Strategies and; 5) Public Plan Review and Adoption. The following discusses each step of the planning process and the methodologies used for each plan component.

a. Step 1: Creation of Hazard Planning Team

The preparation of the hazard plan began in Fall 2002 when the Rye City Council formally accepted a Pre-Disaster Mitigation Planning Grant from the New York State Emergency Management Office (NYSEMO). At that time the Council also designated a Hazard Mitigation Committee and selected its members to assist the City Planner and City Manager's Office in the preparation of the plan. The Hazard Mitigation Committee consisted of City staff, emergency service providers and others representing a variety of interests in the community[14]. Many of the members of the planning team had background in hazard mitigation since they were part of the City designated Project Impact Committee[15].

The purpose of the Committee was to provide continuous guidance and feedback for each of the plan components. Members with technical background in hazard mitigation or emergency response were relied upon heavily in assessing risks, vulnerabilities and response capabilities. Long-time Rye residents on the Committee were helpful in providing historical background or knowledge of prior hazard events and impacts.

To further trigger community interest in the hazard mitigation process a press release was prepared for local newspapers advising readers of the preparation of the plan and encouraging public involvement.

[14] A complete list of the Hazard Mitigation Committee is provided in Appendix C.
[15] The City of Rye was selected as a FEMA Project Impact Community in 1998. The purpose of project impact is to promote the creation of disaster resistant communities through the creation of aggressive hazard mitigation practices.

b. Step 2: Hazard Identification and Prioritization

After the Committee was established its first task was to identify potential natural and manmade hazards and to prioritize their impact on the community. In identifying and prioritizing hazards a number of factors were considered including the scope or impact area, frequency of occurrence, advance warning of the hazard, the length of the event and the amount of time required to recover from an event. Many of the hazards that were identified were based on the Hazard Analysis Report prepared by New York State Emergency Management Office (NYSEMO) for the City in 1998 (See Appendix A). A complete discussion of the methodology for hazard identification and prioritization provided in Section III.A.

The Committee identified and prioritized hazards at meetings in November 2002 and January 2003. The meetings were open to the public and advance notice of the meetings were posted on the City website.

c. Step 3: Risk Assessment and Vulnerabilities

City staff and the Committee assessed the City's vulnerabilities to each of the hazards identified and profiled in Step 2. The Committee helped identify at-risk facilities including emergency response facilities, sensitive buildings or other vulnerable properties that should be protected or considered from a hazard mitigation perspective. A more complete discussion of the methodology for identifying these facilities is provided in Section III.C.

There was heavy reliance upon the City's Geographic Information System (GIS) in the risk assessment process. All at-risk facilities were mapped to better assess their relationship and vulnerability to geographically definable hazard areas such as flood zones, hazardous materials corridors, hazardous materials sites, etc. The GIS, which included City Assessor data, also helped quantify the City's assets and the cumulative value of property and structures within hazard prone areas. Risk was further quantified based on the number of people at critical or at-risk facilities that could be impacted by various hazard events.

The Committee conducted risk assessment at meetings in January and May 2003. The meetings were open to the public and advance notice of the meetings were posted on the City website. Representatives from NYSEMO also attended one meeting of the Committee during this stage.

d. Step 4: Policy Review and Mitigation Strategies

Once the planning issues and opportunities were established, the next step in the planning process was to review existing hazard mitigation policies, amend and update existing goals and objectives and develop mitigation strategies. Goals and objectives were reviewed and approved by the Committee in meetings in

June and August 2003. Also at these meetings the Committee brainstormed for additional mitigation strategies not contained in existing planning documents.

Section V of this plan provides a complete listing of the mitigation objectives and strategies. Section VI evaluates each strategy in terms of the degree to which it addresses the goals of the plan. The cost, effectiveness, time frame to implement, implementation responsibility and funding source were also reviewed. Alternative strategies were reviewed and discussed. Those that were deemed not to have a realistic opportunity for implementation due to excessive cost, questionable effectives or other implementation barriers were not included in the plan.

e. Step 5: Public Plan Review and Adoption

The final step of the planning process involved compiling the information obtained in steps one through four into a hazard plan document. Drafts of the hazard plan were provided to the Committee for their review and comment. In June 2003 a draft of the plan was presented to NYSEMO for their review and comment. The document was revised based on NYSEMO comments and a final draft was prepared in August 2003.

The August 2003 draft was made widely available for public review and comment, including posting the document on the City's website. The final draft was also submitted to the Rye City Hazard Mitigation Committee, City Council, Planning Commission and Conservation Commission/Advisory Council for their review and comment. The Planning Commission conducted a formal review at a public meeting in September 2003. This meeting was publicly noticed. The document was also provided to FEMA for its review, which provided comments in December 2003 requiring substantial revisions.

In June 2004, a revised final draft was prepared reflecting the comments of FEMA, NYSEMO, City Boards and Commissions and the general public. The City Council considered the adoption of this document at its June 16 meeting. Final adoption by the City Council was on April 25, 2007.

2. Hazard Plan Adoption

The Rye City Council will be responsible for adopting the hazard mitigation plan. This legislative board is the most appropriate since it is responsible for establishing City policy, particularly those related to hazard mitigation. The City Council also has the authority to implement most of the strategies recommended in this plan including setting policy direction for City Staff, allocating funding and adopting amendments to existing City laws.

B. Implementation Through Existing Programs

Successful plan implementation will require that strategies be implemented through existing City programs and institutionalized in the City's policy formation and decision-making process. Table 4 assigns responsibility for implementation for each strategy. It also identifies the existing City program that will best facilitate the implementation of that strategy. The existing programs include the following:

- *City Code Revisions.* These include strategies that will require City Council adoption of revisions to the existing City Code including changes in the City zoning code, floodplain management requirements, subdivision regulations, housing standards or other relevant City Code Chapters or planning documents.

- *Code Enforcement.* These programs include those activities involving changes in code enforcement. In many cases this includes changes in the enforcement of laws by the Rye City Building Department. In other cases modification in police enforcement or fire prevention activities may be necessary.

- *Capital Improvements Program and Budget*. Strategies involving significant City expenditures will need to be implement through the City's Capital Improvements Program (CIP), which is approved annually by the City Council. Strategies involving smaller expenditures such as funding increases to City Department to increase maintenance or enforcement activities will likely be administered through the annual budget process, which is also adopted by the City Council.

To further promote plan implementation it is recommended that hazard mitigation be reviewed and considered prior to the adoption of new or amended zoning, land use and public safety statues and other appropriate local ordinances, policies and programs. Consideration of hazard mitigation as part of the formation of City policy will help institutionalize mitigation concerns as part of the City's decision-making process. The Hazard Mitigation Committee (discussed below) could also assist in this process.

C. Plan Monitoring and Evaluation

It is important that a process be defined to encourage and facilitate the implementation of the plan recommendations after its adoption by the City Council. This process will require that the plan be regularly monitored to evaluate the extent to which the proposed mitigation strategies have been implemented. This plan proposes that a Hazard Mitigation Committee be established to monitor the plan, promote its implementation, facilitate public input and report to the City Council on a regular basis.

1. Hazard Mitigation Committee

It is recommended that the City Council establish a Hazard Mitigation Committee, which will be responsible for promoting and encouraging the implementation of the Hazard Mitigation Plan. The City Council would appoint all members (between 5 or 9) and the Committee Chair. It is anticipated that some or all of the members would be those participated in the preparation of the plan. City Staff including the City Manager, City Planner, City Engineer/Director of Public Works, Police Commissioner and Fire Chief would provide technical support to the Committee. If desired by the City Council the Rye City Planning Commission could readily assume the responsibilities of the Hazard Mitigation Commission given their existing background, City staff support and City Charter powers and duties. This would avoid the need for creating a new committee.

Among the primary responsibilities of the Hazard Mitigation Committee will be to monitor the progress of the plan implementation. The Committee would meet twice a year to review the list of recommended implementation strategies in the plan and evaluate based on the input of City staff the extent to which these strategies have been implemented. The Committee would provide an annual progress report to the City Council on the extent of implementation and suggest mitigation priorities for the upcoming year.

Based on City Council direction, the Hazard Mitigation Committee would also be responsible for facilitating and coordinating the implementation of the mitigation strategies in the plan. For instance, the Committee would assist in conducting more detailed examinations of the feasibility of appropriate mitigation strategies, promoting community partnerships with interest groups and other organizations or conducting outreach programs that community awareness of hazard risk and mitigation measures.

The Hazard Mitigation Committee could also serve as a resource to other City Boards and departments regarding proposed policy changes or projects. Changes in regulations by the City Council, for instance, could be referred to the Committee for their review and recommendation regarding the consistency of the proposed change with the policies and strategies of the Hazard Mitigation Plan.

2. Plan Updates

The Hazard Mitigation Plan will serve as the Committee's principal roadmap for implementation strategies. It is inevitable, however, that over time conditions will change, new data will become available and implementation experiences will develop that require modifications to the plan. In the fourth year after the adoption of the Hazard Mitigation Plan the Committee will prepare a report to the City Council that addresses the status of various implementation projects, identifies difficulties encountered, discusses the success of coordination efforts and recommends which strategies should be revised. Upon receipt of this report the City Council will direct the Committee with

City Staff assistance to revise the plan as necessary. The revised plan will be re-adopted by the City Council every five years.

3. Continued Public Involvement

The Hazard Mitigation Committee, which consists of appointed community members will be responsible for annual reviews of the plan and progress reports to the City Council. The time and location of all Committee meetings will be posted in advance on the City website and public access channel and open to the public. In addition, the annual reports of the Committee to the City Council will be in public hearing format, offering any member of the public the opportunity to express concerns, opinions and ideas about the plan.

The adopted Hazard Mitigation Plan will be available at public facilities such as City Hall and the Rye Free Reading Room. The plan will also be available on the City website. The website will contain an email address and phone number to which people can direct their comments and concerns.

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Appendix A

City of Rye

Hazard Analysis Report

New York State Emergency Management Office
August 1998

Background

The City of Rye, Westchester County is one of two municipalities in New York State selected by the Federal Emergency Management Agency as a "Project Impact" community. Project Impact challenges communities across the nation to become disaster-resistant by building local partnerships, assessing vulnerabilities to hazards, and implementing actions to protect families and businesses by preparing for and reducing the damaging effects of disasters. The first step in this process is to assess a community's hazards.

On August 5 and 6, 1998, the City of Rye, in conjunction with the New York State Emergency Management Office, conducted a hazard analysis using the automated program, ***HAZNY*** (Hazards New York). ***HAZNY*** was developed by the American Red Cross and the New York State Emergency Management Office.

The results of this hazard analysis are presented in this report.

HAZNY and the City of Rye

HAZNY is an automated interactive spreadsheet that asks specific questions on potential hazards in a community and records and evaluates the responses to these questions. ***HAZNY*** also includes historical and expert data on selected hazards. ***HAZNY*** is designed specifically for group, rather than individual, use. The City of Rye assembled a group of twelve local officials to consider and discuss the questions and issues raised by the ***HAZNY*** program. Representatives from the State Emergency Management Office facilitated the meeting and recorded the results.

The Results

The group analyzed 23 hazards potentially affecting the City of Rye. ***HAZNY*** rated each hazard based on the group's assessment and assigned an numerical value. These values are categorized as follows:

301 to 400	**HIGH HAZARD**
201 to 300	**MODERATELY HIGH HAZARD**
101 to 200	**MODERATELY LOW HAZARD**
44 to 100	**LOW HAZARD**

The group rated the 23 hazards as follows:

Flood	322.8
Hazardous Materials in Transit	297.2
Nor'easter	296.2
Oil Spill	295.5
Hurricane	290.5
Fire	284.8
Explosion	278.8
Power Failure	264.5
Transportation Accident	252.7
Hazardous Materials at Fixed Sites	239.5
Tornado	235.8
Ice Storm	227.8
Winter Storm	208.5
Structural Collapse	194.2
Terrorism	179.5
Dam Failure	159.2
Drought	150.5
Water Supply Failure	149.8
Earthquake	143.2
Radiological Materials in Transit	125.2
Wildfire	111.2
Blight	108.2
Year 2000 Date Change	95.8

High Hazards

The hazard "Flood" rated at 322.8 was the only hazard determined by the analysis to be a High Hazard. The group reviewed a map identifying large coastal and central city areas designated as flood plains by the federal government (see map). The coastal flood plains showed significant residential development in one area, while the central city flood plains showed much commercial, governmental and residential development, both causing "severe" damage to both private property and the infrastructure. The group identified flooding in the City as a "frequent event" and determined that the credible worst case flood event "would likely cause serious injury or death but not in large numbers." The basis for this determination was that the existing emergency medical system could handle the anticipated casualties.

Moderately High Hazards

Twelve hazards were determined to be Moderately High Hazards. These are Hazardous Materials in Transit, Nor'easter, Oil Spill, Hurricane, Fire, Explosion. Power Failure, Transportation Accidents, Hazardous Materials at Fixed Sites, Tornado, Ice Storm, and Winter Storm.

"Hazardous Materials in Transit" rated at 297.2 was the highest rated hazard in this category. The group considered hazardous shipments via tractor-trailer and rail on a corridor extending the north-south length of the city and potentially impacting much of the northern part of the city. The group identified hazardous materials in transit emergencies as a "frequent event" occurring "more than once a year" and determined that the credible worst case event "would likely cause serious injury or death to large numbers" requiring the full or near full activation of the area's emergency medical disaster plans. Compounding this situation was the determination that there is "no warning" for these events.

"Nor'easter," coastal storms bringing high winds, shore erosion, and an abundance of rain, was next rated at 296.2. The group determined that Nor'easters were a "frequent event" that "would unlikely cause serious injury or death." "Several hours warning" should be provided for Nor'easters.

"Oil Spill" was next rated at 295.5. It is a "frequent" hazard in Rye and occurs with "No warning." The group determined that a credible worst case Oil Spill in the City would cause "moderate" overall damage to both private property and the infrastructure but would "unlikely cause serious injury or death."

"Hurricane" rated at 290.5 is a "regular" hazard in the City occurring between once every year and once every seven years. A credible worst case event would "likely cause serious injury and death to large numbers" and cause "severe" overall damage to private property and the infrastructure in the City.

"Transportation Accident" rated at 252.7 includes highway, rail, air and marine vehicle accidents with mass casualties. It was the only hazard rated by the group to "likely cause serious injury or death to extremely large numbers."

"Tornado" rated at 235.8 was determined to be an "infrequent" event, occurring once every eight to fifty years. Six tornadoes have been identified as striking Westchester County in the last 45 years but all six recorded as relatively low intensity ("1" on the Fujita scale). The group determined that a credible worst case tornado striking the City would cause "severe" overall damage to private property and the infrastructure.

Moderately Low Hazards

Nine hazards were determined by the group to be Moderately Low Hazards. These are: Structural Collapse, Terrorism, Dam Failure, Drought, Water Supply Failure, Earthquake, Radiological Materials in Transit, Wildfire and Blight.

The areas where Wildfire and Blight could impact in the City were very limited and both were deemed "rare events."

Low Hazards

The group determined "Year 2000 Date Change" to be a low hazard. This hazard was analyzed by the group at the request of the State. The group determined that this hazard "would unlikely cause serious injury or death" and that it would cause "little or no damage" to private property or the infrastructure. The State Office of Technology has described the City of Rye's effort to address the Y2K issue as among the most active in the State. This effort has likely reduced the potential Y2K problem which is reflected by the rating.

Recommendations

The State Emergency Management Office recommends that the City of Rye investigate mitigation measures for the hazards "flood" and "hazardous materials in transit," the two highest rated hazards. Such efforts, if successful, should have positive impacts on the next three highest rated hazards, Nor'easter, Oil Spill and Hurricane.

Appendix B

PROPERTIES WITH HAZARDOUS MATERIALS HANDLING OR STORAGE

City of Rye, New York

	Program ID	Site Name
1	NYD986975118	RYE COUNTRY DAY SCHOOL
2	NYD122274343	WESTCHESTER AUTO BODY
3	NYD013166608	RYE FORD INC
4	NYD986973485	RYE SHELL AUTO CARE LTD
5	NYD981560253	FALCON CLEANERS
6	NYD981078025	DUTCH GIRL CLEANERS
7	NYD041768821	GRUBERS CLEANERS & TAILORS INC
8	NY0000191973	INNOVATIVE CLEANERS
9	NY0000370874	MITSUBISHI PAPER INTL
10	NYD986959138	MOBIL OIL CORP SS EWP
11	NYD061343968	BILTMORE AUTO SALES INC
12	NY0000574962	ELITE CLEANERS CO
13	NYR000005595	FONGS LAUNDRY
14	NYR000008102	RYE CITY OF RYE CITY HALL
15	NYD981077993	BELLE CLEANERS
16	NYD982541559	RUSSELL'S AUTO BODY INC
17	NYD000702555	SVC STA
18	NY0000130153	RYE PRINTING CO
19	NYD001317197	CONTINENTAL BAKING CO
20	NYD030478127	LAIDLAW - PLAYLAND AMUSEMENT PARK
21	NYD986904167	NYSDOT BIN 5000080
22	NYD135811503	CON EDISON RYE SVC CTR
23	NY0000942490	NYS THRUWAY AUTH
24	NYD987019452	NYSDOT BIN 5520030
25	NY0000942508	NYS THRUWAY AUTH
26	NY0000942524	NYS THRUWAY AUTH
27	NY0000942482	NYS THRUWAY AUTH
28	NY0000942516	NYS THRUWAY AUTH
29	NYD986907657	NYSDOT BIN 1049859
30	NYD986985794	NYSDOT BIN 1049889
31	NYD987036118	T E I AT THE PLAYLAND AMUSEMENT PARK
32	NYD986907665	NYSDOT BIN 1049879
33	NYD986907673	NYSDOT BIN 1037379
34	NYD013166483	RYE AUTO COLLISION WORKS
35	NYD986930592	OSBORN RETIREMENT COMMUNITY THE
36	NYD987013166	RYE HIGH SCH
37	NYR000007708	MITSUBISHI IMAGING
38	NYR000013201	KNAPP HOUSE - RYE HISTORICAL SOCIETY
39	NYD986970531	RYE GOLF & POOL
40	NYD987005824	AMERICAN YACHT CLUB
41	NYD986942498	GETTY SVC STA

Source: Westchester County GIS, U.S. EPA, May 1998

Appendix C

City of Rye
Hazard Mitigation Committee Members

- EMS Administrator (Ambulance)
- James P. O'Toole (Con-Ed)
- Ms. Roseanne McSorley (Deutschebank)
- Commissioner Bill Connors (Police)
- Dr. Peter Mustich (Rye Neck School District)
- Ms. Liam Murphy (Westchester County Emergency Management)
- Scott Nelson (Rye Country Day School)
- Dr. Edward J. Shine (Rye City School District)
- Mr. Joseph Montalto (Playland Amusement Park)
- Dr. Robert Leviton (United Hospital Emergency Management)
- Mr. Peter Donahue (Mill Pond Marina)
- Mr. Nathaniel Levin (League of Women Voters)
- Mr. Francis Harrigan (Harrigan Insurance)
- Mr. Paul Weberg (FEMA)
- Mr. Don Wnorowsk (Emergency Management Coordinator)
- Mr. Gene Malkis (American Red Cross)
- Peter Cann (American Red Cross)
- Allen Clark (Rye Record)
- Sandford Goldman (Resident)
- Michael Klemens (Planning Commission)
- Joseph Cox (Resident)
- Nicholas Everett (Board Architectural Review)
- Nicholas Hodnett (Conservation Commission)
- Adreienne Mecca (Resident)
- Jeremiah McGuire (Resident)
- William Ball (Resident)
- Dotty Battel (Resident)
- Joseph Brendel (Resident)
- Thomas Cury (Resident)
- Jean Lomonaco (Resident)
- Viriginia Cury (Resident)
- Kim Potter (Resident)
- Jennifer Ricketts (Resident)
- Warren Ross (Resident)
- Phillip Adler (Resident)
- Harold Nielson (Resurrection)
- George Hogben (Fire)
- Chantal Detlefs (Nature Center)
- Ryan Coyne (Asst. City Engineer)
- Steve Otis/Carolyn Cunningham (City Council Reps.)
- Sally Wright (Rye Merchants Association)

Acronyms

AED	Automated External Defibrillator
CBD	Central Business District
CON ED	Consolidated Edison Co. of New York
CFR (D)	Certified First Responder (w/ defibrillator)
CRS	Community Rating System
DARE	Drug Abuse Resistance Education
DEC	Department of Environmental Conservation
DES	Department of Emergency Services
DMA	Disaster Mitigation Act
DPW	Department of Public Works
DOT	Department of Transportation
EAS	Emergency Alert System
EMS	Emergency Medical Service
EMT	Emergency Medical Technician
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
FMA	Flood Mitigation Act
FIA	Federal Insurance Administration
FEMA	Federal Emergency Management Agency
RFD	Rye Fire Department
GIS	Geographic Information Systems
HAZMAT	Hazardous Materials
HAZNY	Hazards New York
HMGP	Hazard Mitigation Grant program
ISO	Insurance Services Office
LWRP	Local Waterfront Revitalization Plan
MC	Membership Club
NCDC	National Climate Data Center
NFIP	National Flood Insurance Program
NYS	New York State
NYSPIN	New York State Police Information Network
NYSEMO	New York State Emergency Management Office
NYUHMC	New York United Hospital Medical Center
OEM	Office of Emergency Management
RPD	Rye Police Department
RACES	Radio Amateur Civil Emergency Service
RCTV	Rye Community Television
WAC-3	Watershed Advisory Committee - Three